TECHNOLOGY DEPT

TELEPHONE and Management ENGINEER

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NOVEMBER
1956

Vol 60 # 11

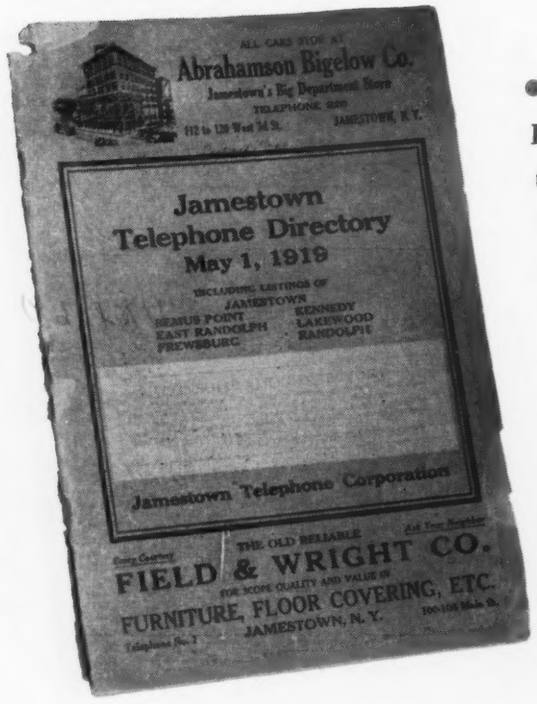
IMPORTANT ANNOUNCEMENT!
See Pages 14 and 15

THE NATIONAL TELEPHONE MAGAZINE

Featuring in This Issue—

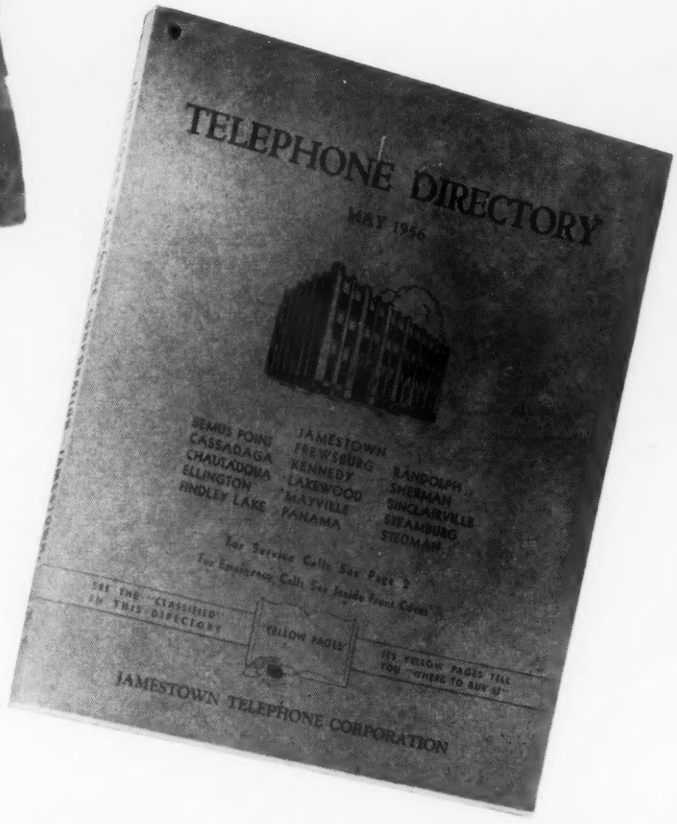
★ A NEW ERA IN COMMUNICATIONS, *by B. C. Burden*
★ TOLL COMPENSATION PROBLEMS, *by W. R. Jarmon*
★ MODERN CABLE CONSTRUCTION, *by John S. Reed*
★ NEWSLETTERS — INDUSTRY — MANAGEMENT — WASHINGTON
★ TELEPHONE ASSOCIATION ACTIVITIES ★ NEWS BRIEFS

meet some of
L. M. BERRY'S
long established customers...



• The Jamestown Telephone Corporation is one of Berry's long established Telephone Company customers. For thirty-seven years Berry has been handling their Directory Advertising . . . proof of customer satisfaction.

• You, too, can join the list of Berry's 265 satisfied Telephone Company customers. Without obligation send us a copy of your directory. We shall be glad to study it and tell you how much revenue we think it should produce.



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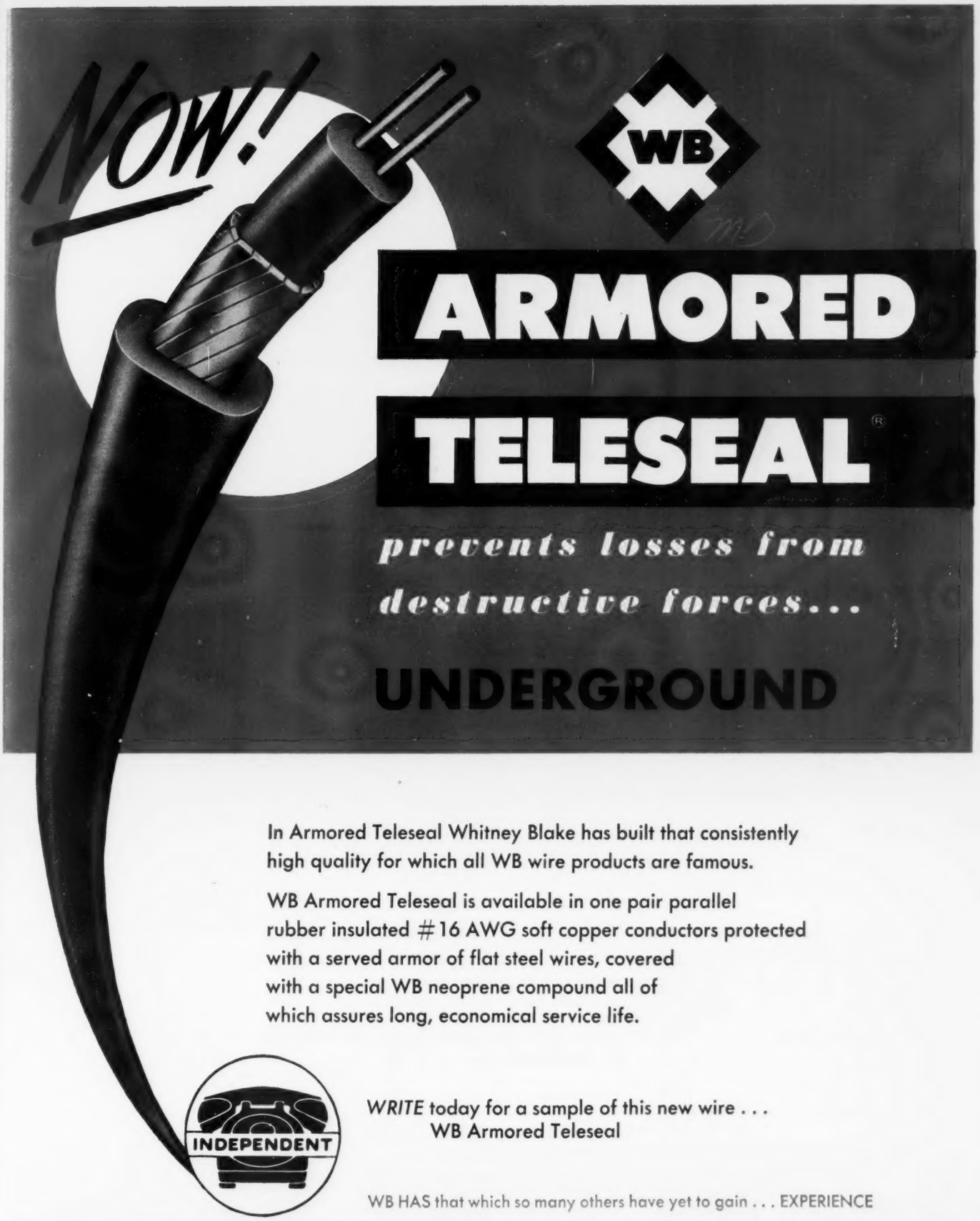

In Armored Teleseal Whitney Blake has built that consistently high quality for which all WB wire products are famous.

WB Armored Teleseal is available in one pair parallel rubber insulated #16 AWG soft copper conductors protected with a served armor of flat steel wires, covered with a special WB neoprene compound all of which assures long, economical service life.

INDEPENDENT

WRITE today for a sample of this new wire . . .
WB Armored Teleseal

WB HAS that which so many others have yet to gain . . . EXPERIENCE

Well Built Wires Since 1899

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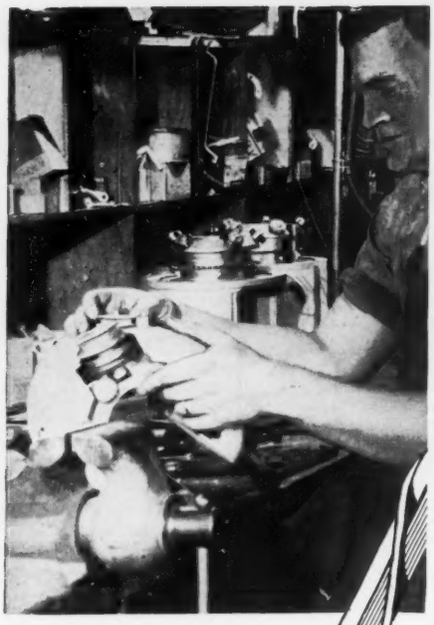

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COMPLETE "PARTS" DEPARTMENT

Parts shipped from stock same day for field repairs

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TELEPHONE and Management ENGINEER

A Telephone Engineer Publication

NOVEMBER 1956
Vol. 60 No. 11

The National Telephone Magazine

Editor, RAY W. SMITH • *Advertising Director*, ROY F. SMITH
Managing Editor, JOHN G. REYNOLDS
Advertising Mgr., DON C. SORENSON • *Production Mgr.*, HELEN McCORKLE
Technical Editor, JOHN S. REED • *Traffic Editor*, RUTH E. RICHARDS
Washington Bureau, Editors of "Telecommunications Reports"
Small Company Editor, BILL CORMAN
Circulation Manager, PAT LAWHORN

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FRONT COVER

Congratulating the North Carolina Association's new President F. G. LA PRADE, (front row center) is outgoing President L. S. BLADES JR. (left). Standing next to new President LA PRADE is newly elected Third Vice President, L. D. GARIBALDI, First Vice President and W. A. CARPENTER, Second Vice President.

Volume 60, No. 11. Published monthly by TELEPHONE ENGINEER PUBLISHING CORP. Office of Publication, Rochelle, Ill. Executive and Editorial Office, 7720 Sheridan Road. Chicago 26, Ill. Telephone — Rogers Park 4-3040. Subscriptions: U. S. and Possessions, $3.00 per year; Canada $3.50; in all other countries, $5.50. Single copies, U.S.A., 35 cents. Entered as second class matter at the post office at Rochelle, Ill. under the act of March 3, 1879.
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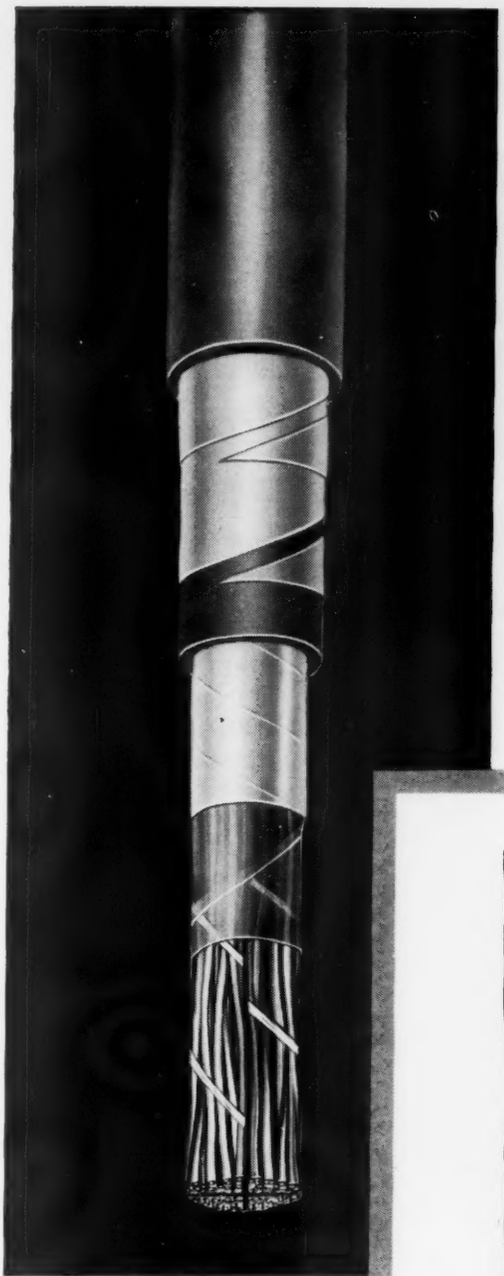
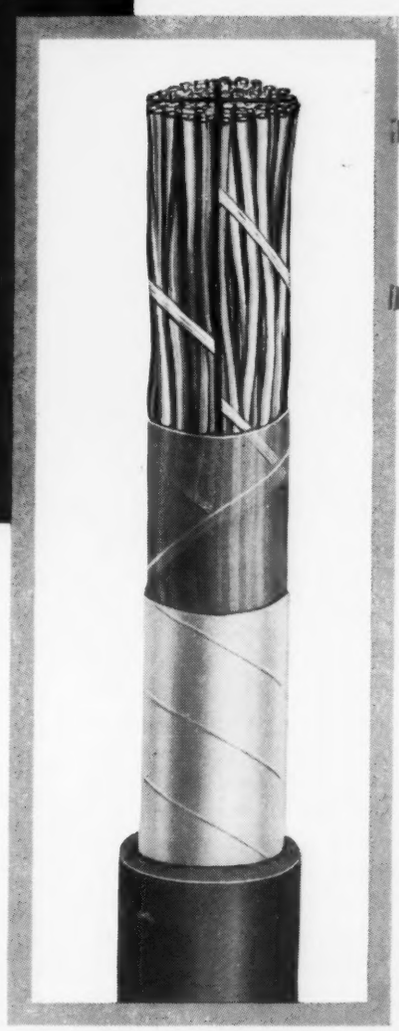


Type VII: direct earth burial

GENERAL CABLE QUALITY...

SUPERTEL

THERMOPLASTIC TELEPHONE CABLE



Type III: aerial and duct installations

SIZES 19, 22, 24
***and now in* 26, AWG**

Superior electrical quality and tough, high-molecular-weight polyethylene jacket ensure permanent high quality transmission. Withstands abrasion, bending, effects of sunlight or chemicals, low temperature deformation or cracking.

Distributed through
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GENERAL CABLE CORPORATION
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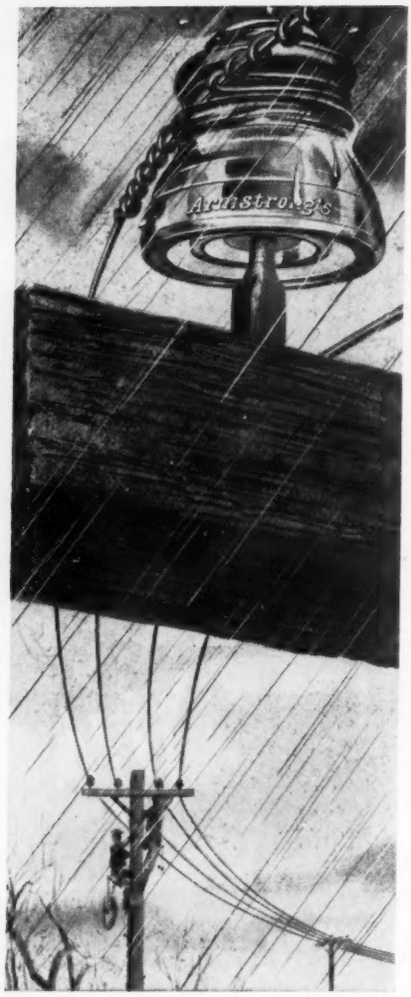
Offices and Distribution Centers
Coast-to-Coast.

***for quality and service . . .* specify GENERAL CABLE**



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The smooth surface and flat seams of Armstrong Glass Insulators keep surface leakage to a minimum. They permit the rain to readily wash the surface of the insulator clean . . . and prevent dirt and moisture from accumulating. Rain or shine, you can look to Armstrong Insulators for dependable service. For full details about every model in the line, write to Armstrong Cork Company, 295 Fifth Ave., New York 16, N. Y.

Watch Armstrong Circle Theatre every other Tuesday evening on NBC-TV

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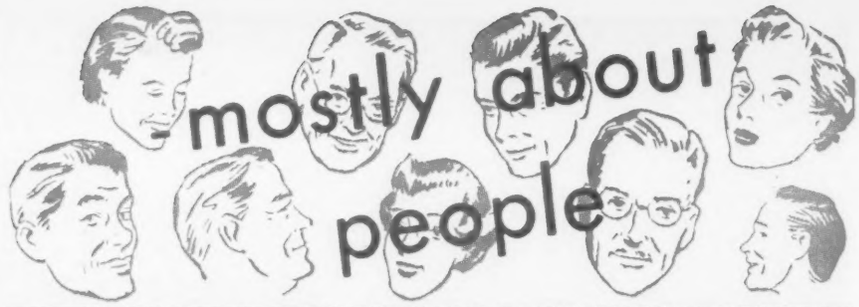
GLASS INSULATORS
for communications . . . for power



ACROSS THE EDITOR'S DESK

Visitor From Lincoln

JOHN S. REED, of the Lincoln (Nebr.) Tel. & Tel. Co. and Technical Editor of this magazine, and *Mrs. Reed* attended the national USITA convention in Chicago last month and were busy shaking hands with old friends and meeting many new ones. Mr. Reed was impressed by the large and many exhibitors showing at this year's meeting.

Howard Van Zandt

A POSTCARD from Tokyo was delivered to us on the opening day of the convention at the Hilton from our old friend *Howard F. Van Zandt* who is Far Eastern Representative of International Standard Electric Corp., a subsidiary of IT&T. Howard told us in his Air-Mail card he would probably be in Korea during the days of the convention, and sent his best wishes for a successful meeting.

Pat Patterson

PAT PATTERSON of Chicago was also in foreign climes at convention time. His card from Switzerland dated October 1 brought us greetings and a hello. Pat is one of the boss men of the Pioneer Telephone Co. in Minn. and also spends quite a bit of his time at the Inter-County Telephone Co. at Ft. Myers, Fla. His brother was representing the Pattersons at the convention and did it very well. The hula girls at the banquet voted him most likely to succeed!

H. T. McCaig

H. T. McCAIG, sales manager of the Lorain Products Co., was hospitalized this summer but had recovered sufficiently to be on hand to greet his friends at convention headquarters. Our camera found him visiting with one of his cronies on the exhibit floor and included him in one of our picture panels of the conventions.

Carl Brorein

CARL BROREIN of Tampa was host to 49 members of his organization of the Peninsular Telephone Company at a breakfast on the second morning of the big convention. This represented the largest delegation in passenger miles attending the convention. 98,000 pasenger miles is a lot of miles.

George E. Brewer

GEORGE E. BREWER, until September 1 industrial relations director of the General Telephone Corp., New York, has been named assistant vice president of the New York Trust Co., 100 Broadway, New York City. He will report to the vice president of personnel which means he will continue his work in the field he has pursued during his years in our industry.

Washington Visit

THE WEEK FOLLOWING the USITA convention in Chicago this writer visited the Washington headquarters of that association. Exec. V.P. *Clyde S. Bailey* extended the welcome mat and made our visit at association headquarters one to be remembered. While there we saw *Dick Crowe* of Dos Palos, Calif. who was in the nation's capital to attend a meeting of the REA advisers group who met during that week. Mr. Bailey's staff was a beehive of activity following the annual meeting at Chicago. As soon as the new Committees have been named by president *Donald C. Power* we will carry the appointments in the magazine.

The flexible neoprene base has integral wire entrance sealing slots and, with its tapered design, closes the cover so snugly that it is truly weather-tight and insect tight.

Station Protection–A New Design

Only the fuses and the discharge blocks remain unchanged–performance and dependability continues as before. There is a phenolic fuse mount, rather than porcelain–a flexible neoprene base with integral wire entrance sealing slots instead of open wire holes–a fuse mount and terminal post redesign that puts the wiring snugly in place without removing fuses–a fuse mount that can be easily reversed to wire from right or left. All metal parts are either bronze, aluminum or stainless steel.

Reliable's new Series 2000 Station Protector replaces the Series 1000 with design changes only–changes that are good for the Telephone Plant.

Reliable

RELIABLE ELECTRIC COMPANY CHICAGO

Industry NEWSLETTER

AID FOR OPERATORS

AS AN AID for operators in carrying out their work, a number of improvements in on-the-job training are due to be placed in effect soon throughout the Bell System.

FOR THE PAST DOZEN YEARS or so, an important means for determining training needs has been to take a regular sampling of calls being handled by individual operators. From these samples, now known as progress observations, an evaluation is made of the ease of handling the various elements that go into the operating job — such as recording ticket details, routing and advancing calls, quoting rates and charges, and tone of service.

ONE IMPROVEMENT calls for enlarging the samples to provide a fairer, more dependable picture of how the operator handles her work. Instead of basing training assistance on a half hour of observation, there will be two and a half hours spread over two weeks. This will greatly reduce the chance of an "off" day error being noted as an habitual mistake and help can thus be concentrated on those items where the operator really does need it.

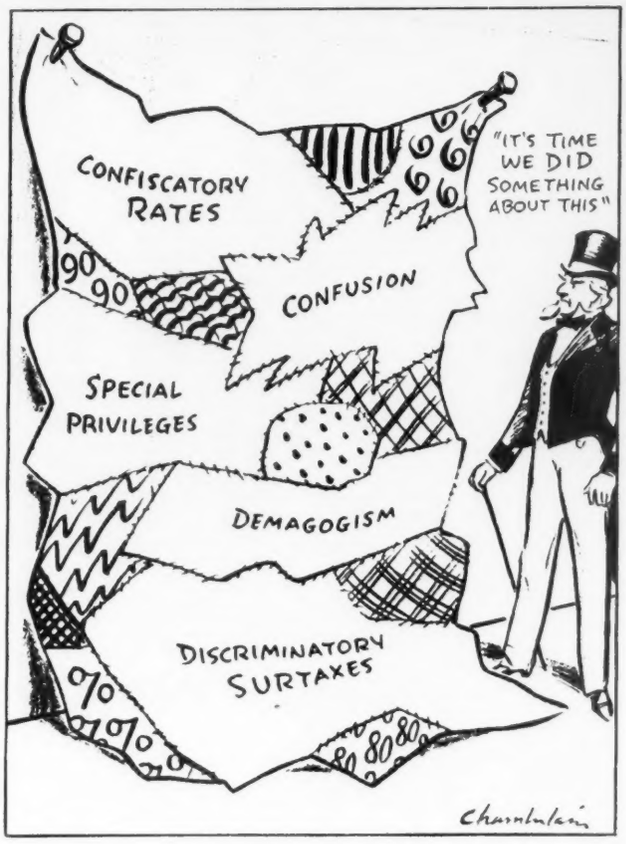
UNDER ANOTHER CHANGE, the operator is encouraged to take an active part in ironing out her work problems. After an observation period she will be asked to select the items she feels might benefit from reviews and drills. She will also be asked to suggest the kind of training she thinks will be most useful.

THESE AND OTHER CHANGES are designed to increase operators' interest in their own development, give them more personal satisfaction in their work and help them to do a better job. And this, of course, will lead to better service for the public.

AT&T SYSTEM NETS $723 MILLION

AMERICAN TEL. & TEL. CO., reported consolidated net income for the 12 months ended Aug. 31 of $723,325,157, equivalent to $13.37 a share on 56,031,406 average capital shares outstanding. The telephone system's consolidated net for the preceding year period was $626,635,232, equivalent to $12.68 a share on 49,417,510 shares. For the August quarter, net was $187,568,273 or $3.35 a share, compared with net of $164,785,044 or $3.25 a share a year ago.

OUR CRAZY-QUILT INCOME TAX LAW



NET INCOME of the parent company alone for the 12 months ended Sept. 30 was $597,440,000 or $10.94 a share on 56,466,000 average capital shares outstanding. Parent company net in the previous 12-month period was $527,931,648, or $10.61 a share on 50,840,498 capital shares. Net for the parent company for the September quarter was $152,370,000 or $2.70 a share, compared with $139,236,386 or $2.74 a share. Frederick R. Kappel, president, reported that 750,000 telephones were added in the third quarter, making a gain of 2.3 million for the nine months.

LINE EXTENSION POLICIES

LAST MONTH the Ohio Public Utilities reviewed with industry members its proposed rules and regulations concerning "excess construction charges" to be paid by the subscriber or subscribers. The contemplated

(Please turn to page 12)

"It's IRRADIATED and the dielectric strength is doubled!"

NEW . . . IMPROVED

SUPERIOR TELEPHONE CABLE

NOW contains a polyethylene tape* developed by radiation chemistry!

New, improved SUPERIOR TELEPHONE CABLE now provides three additional features to assure you of top performance under all conditions:

- **Doubled dielectric strength** . . . for greater lightning protection.
- **Practically uniform capacitance** . . . the deviation in mutual capacitance now less than 1½%.
- **Insulation "graded" to conductor sizes** . . . to match closely the universal transmission standards for loading coils and terminating equipment.

SUPERIOR CABLE is accepted by REA and conforms to REA Spec. PE14.

Use all-plastic SUPERIOR CABLE for aerial and direct burial installations . . . it's resistant to moisture, ozone, oils, acids and alkalis! Available with regular spiral shield (5 mil aluminum) or, in certain sizes at slight additional cost, longitudinal shield (8 mil aluminum).

A self-contained tape, marked at one foot intervals up to 10,000 feet, guarantees the footage you receive and lets you measure the footage you use.

For Top Performance at less cost . . . order SUPERIOR CABLE today!

"Super-Splice"

Make splices MOISTUREPROOF, WATERPROOF . . . from inside out!

New Superior "Super-Splice" makes the splice permanently as good as the cable. An REA Standard. Write for details.

For detailed information and price, write

SUPERIOR CABLE

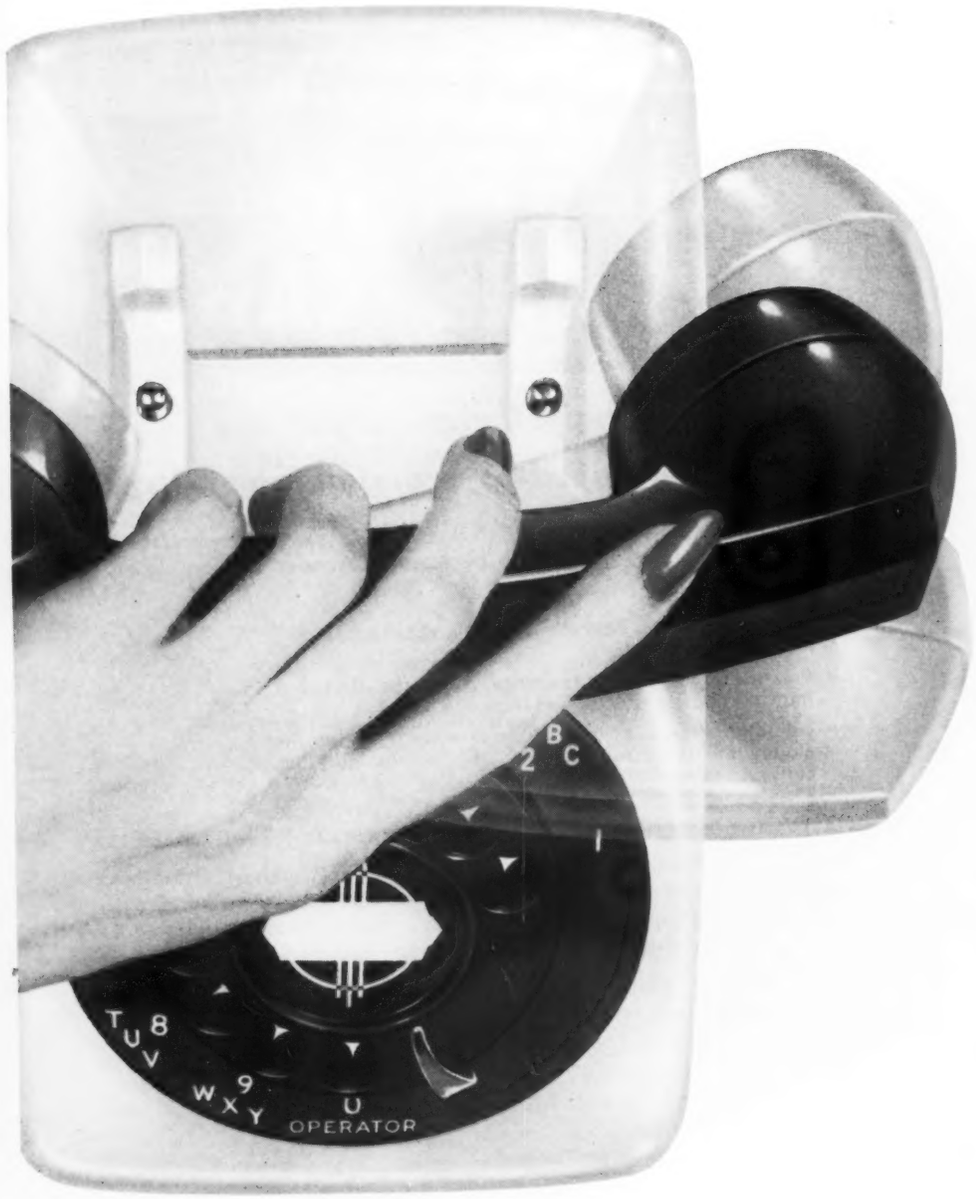
SUPERIOR CABLE CORPORATION

Hickory, North Carolina

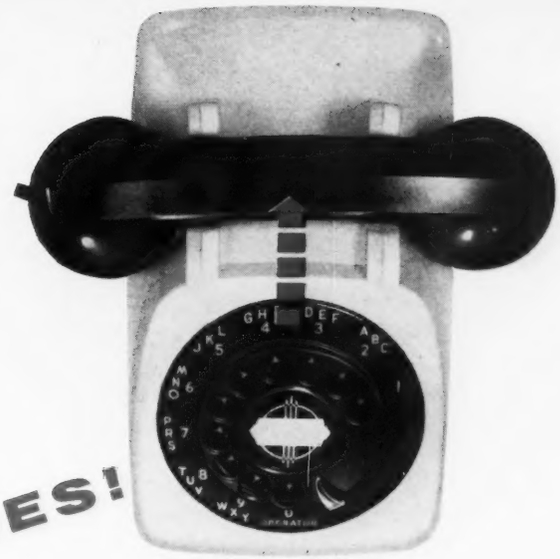
*Irrathene ® irradiated polyethylene film, a General Electric product.

ALMOST ANY WAY

YOU PUT IT...



RIGHT INTO H



TO THE CRADLE IT GOES!

It's Automatic's famous "Walking Handset", one of the most popular features of the Type 80 Monophone. This distinctive telephone is shaped so the handset just "walks" right into place.

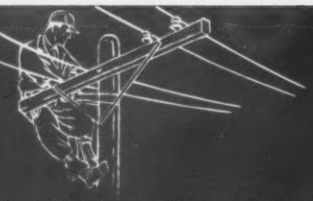
Which practically eliminates "off-hook" complaints—and thereby saves a great many maintenance trips.

We suggest you talk to a man who's standardized on Type 80 Monophones and ask him how many trips it saves *him*. Ask him about Type 80's *low* maintenance, too, and about its time-saving, easily-accessible parts, and its temper-saving Installer's Hooklock. And don't forget to inquire how his subscribers like Type 80's smart styling, easy dialing, and lifelike transmission. You'll see why so many telephone men are buying Automatic's Type 80 Monophone!

Be sure to get *your* order in today. Address: *Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7. Or call HAymarket 1-4300.*

AUTOMATIC ELECTRIC

ORIGINATORS OF THE DIAL TELEPHONE



(Concluded From Page 8)

rules and regulations are to cover maximum construction charges for certain line extensions that are applicable to permanent facilities on public highways outside the base rate area of an exchange, and are as follows:

(1) WHERE A TELEPHONE COMPANY constructs permanent facilities on public highways, in order to furnish service to an applicant or applicants in the territory where no facilities are available, the maximum construction charges applicable shall be determined in the following manner regardless of the actual route to be followed by such construction: When an applicant or applicants are to be furnished service, the length of construction required to reach the point of entrance of the applicants' private property, measured along the public highway either from the nearest existing distributing plant of the telephone company or the nearest point to which the telephone company plans to extend its facilities under an approved construction program, which ever is closer, shall be determined. Where the length thus determined does not exceed one half (½) mile per applicant, no construction charges to the applicant will apply. Where the length thus determined does exceed one half (½) mile per applicant, the applicant or applicants may be required to pay construction charges equal to the estimated expense which would be incurred for installed plant, if a pole line type of facility is used, and for excavation and fill-in if a buried wire or buried cable type of facility is used, for the length in excess of one-half (½) mile per applicant.

NEW RATES

WISCONSIN PUBLIC SERVICE COMMISSION approved a $1,000 a year rate increase for Linden Tel. Co. . . . The North Carolina State Utilities Commission approved $3,076 annual rate increase for Lilesville (N. C.) Tel. Co. The new monthly rates for residential customers will be $5.50 for one-party service, $4.50 for two-party, $4. for four-party and $3.85 for multi-party service. The new monthly business rates will be $9, $6.50, $5.50, and $4.50. The present residential rates are $4.50, $3.50, $2.75, and $2.75, and the present business rates $6.75, $5.25, $4.25, and $4.

HIGHLIGHTS

THE KANSAS Corporation Commission granted Harper County Rural Tel. Assoc., a certificate to take over an exchange at Mayfield, Kans., and approved application of Mayfield Telephone Company to cease doing business. In a related application, the KCC granted Harper County Tel. Assoc., permission to increase rates $1,300 annually to 95 customers served by Mayfield exchange. The association also was granted permission to issue notes and a mortgage in the amount of $363,000 for Rural Electrical Administration financing . . . . Kansas Corporation Commission ok'd plans of Miltonvale Tel. Co., to operate as a telephone utility in Miltonvale and surrounding area and to issue notes and a mortgage in the amount of $93,500 . . . . The Harlston and Ore City, Texas telephone exchanges have been purchased by Etex Tel., Co-operative, Inc. James M. Whitworth, Etex manager at Gilmer, said the co-operative had purchased the two exchanges from M. O. Womack . . . .

THE NEW YORK Public Service Commission approved sale of the bankrupt Killawog Tel. Co., to Marathon Killawog Tel. Co., Inc., for $47,750. At the same time, the PSC granted a provisional certificate of public convenience and necessity to the purchasing company, subject to termination if it does not proceed expeditiously with its proposed program aimed at modernizing the company's operating plant. The Commission also authorized the Marathon Killawog company to borrow up to $374,000 from the Rural Electrification Administration subject to a requirement that the new company deposit all such funds in a special account to be used solely for the construction and rehabilitation of its system and for expenses incidental thereto. Marathon Killawog was also authorized to issue 600 shares of no-par value stock to raise $60,000.

NEW DIRECTORS of the Hill County Tel. Co-op., Comfort, Texas, are: E. M. Peters, Hunt; Howard Blackburn, Ingram, and Warren Klein, Mountain Home. Robert Herbst, president of the board, announced the Comfort and Center Point exchanges had been purchased by the Hill County group at a cost of $90,000. They will be taken over by the co-op. Jan. 1 . . . . The defunct Pleasant Rural Tel. Co., Marble Falls, Texas, organized many years ago, met recently to officially dissolve. Funds in the treasury at the time the company quit operating, totaling $2300, were donated to the Marble Falls volunteer fire department and to the library. The company served Marble Falls, Pleasant Valley and Smithwick . . . . John Gemmen, pres., of the Allendale (Mich.) Tel. Co., announced his company has completed plans for dial service. The Allendale company provides telephone service to approximately 600 subscribers in parts of Allendale and Blendon townships as well as the villages of Allendale and Peraline. Stockholders voted unanimously to spend approximately $80,000 for rebuilding pole lines and purchasing dial equipment.

Stromberg-Carlson carrier unit is inspected from the front. You get at tubes and test points without removing anything. You reach relays by removing the slip-on dust-proof cover; pull out hinged chassis to get at filters, main terminal strip and test jacks.

How this combination opens the door to increased profits for you...

With Stromberg-Carlson Carrier Equipment you get this combination of features that adds further prospects of increased revenue to the over-all advantage of using carrier:

Space saving—Carrier racks can be placed flush against the wall. All three units—voice, signaling and line filters (if line filter balance is not required)—are packaged in a space only 8¾ inches high.

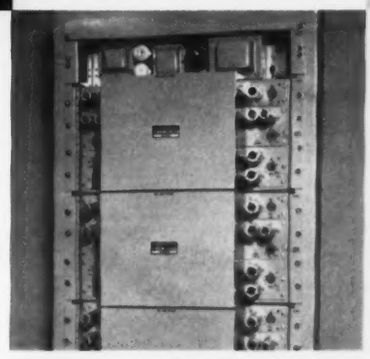
Ease and economy of maintenance—All test and maintenance functions are performed from the front. To test or service filters or main terminal strip, your man simply loosens one screw. The entire front panel swings out, making all sub-panels instantly accessible.

Room for expansion—Channels may be added as needed, one at a time, up to 8 per 7-foot rack.

Standard tubes—All tubes are standard types, available from suppliers in your own community. They are mounted outside the cover for proper heat dissipation.

These and other features of Stromberg-Carlson Carrier Equipment add up to ease of installation and maintenance for long, profitable service.

Your nearest Stromberg-Carlson sales office will be happy to furnish complete details.



You can expand your present channel capacity with Stromberg-Carlson equipment. You can get this additional capacity without complication, and compandors may be added at the four-wire points. Standard two-wire and four-wire levels are used.

Tubes in the Stromberg-Carlson carrier unit last longer because they keep cooler. They are kept uncovered to dispose of heat. Ambient temperatures stay well below levels that can cause potting compounds to melt.

STROMBERG-CARLSON COMPANY

A DIVISION OF GENERAL DYNAMICS CORPORATION

Sales Offices: Atlanta 6, Chicago 6, Kansas City 8, Rochester 3, San Francisco.

Announcing

the merger of

Fortnightly TELEPHONE ENGINEER
and
TELEPHONE ENGINEER & Management

Progressing with the times and with plans to bring telephone men a still bigger and better telephone trade magazine this merger will become effective January 1, next.

Twice Monthly

The publication dates will remain the same, the 1st and 15th of each month. . . . (twenty-four big issues per year)

New Features

New writers are being added to the editorial staff . . . new department columns are being arranged for publication . . . new type faces for easier reading are being considered . . . a new cover is in the hands of an artist . . . and MOST important . . . MORE special articles and up-to-the-minute training courses written exclusively for Telephone Engineer & Management readers will appear in future issues.

No Advance in Subscription Rate

One year $3 — Two years $5 — Three years $6

To appear in January Issue

By
R. G. TUNGATE

The BRITISH Use Explosives in Digging Holes, Trenches

An interesting report on how telephone engineers of the British Post Office use explosives to facilitate digging holes and trenches and for excavating in almost all classes of soils. In the article, Mr. Tungate explains, (1) the precautions and necessary legal observations, (2) a short employe's training course on the handling and use of explosives, and (3) the materials used.

A FOUR STAR ★★★★ SPECIAL

The answer to hundreds of requests from TE&M readers for a book on management

—starts in the January issue—

Profits & Service Through Better Management

by JAMES L. MORRISON

What are the functions of management? Why are these functions inter-related? How can management be improved through the application of techniques? In the first installment of a 12-Chapter Management Training course, Author Morrison starts providing the answers to such questions.

A TE&M STAFF REPORT:

MANAGEMENT NEWSLETTER

In the January issues of "Telephone Engineer & Management" the new and enlarged "Management Newsletter" will bring you ideas, aimed at helping you boost revenues, select and train employes and operate according to legislature that governs the business. New and fresh — You'll like it.

An article of vital importance to the Independent telephone men who are planning for the future

The Independent Company and Direct Distance Dialing

By L. A. Hodson

In the January issues, Mr. Hodson will continue his discussion of the different types of direct distance dialing methods. Don't miss Chapter VI of Mr. Hodson's article. Its packed with information that will help you plan for the future.

Starting in January you'll find a new source of operating information in TELEPHONE ENGINEER & MANAGEMENT'S

Operating Manuals

by

John S. Reed

Operating Manual Number One on "Outdoor Booths" is the first of several operating manuals scheduled for exclusive publication in future issues of TELEPHONE ENGINEER & MANAGEMENT. Operating Manual Number Two will discuss "Fuseless Protection."

HAND BOOK DATA SHEETS

In the January issues of TELEPHONE ENGINEER & MANAGEMENT the "Handbook Data Sheets" will present technical data on (a) tension splices; (b) dead ends; (c) repair sleeves; (d) transposition sleeves and "squeez sleeves" for telephone line conductors. Start building your own reference file with the first installment of Telephone Engineer's new "Handbook Data Sheets."

This series of articles has been acclaimed by thousands of telephone industry members

MODERN CABLE CONSTRUCTION

By John S. Reed

Now in its second year of publication, with Chapter IX scheduled for the January issues of "TE&M," John Reed's discussion of "Modern Cable Construction Methods," has proved in as one of the most helpful of all "TE&M" features. Written as a Training Course with review questions at the end of each chapter, the articles are studied and referred to by thousands of telephone industry members.

Also in the January issues and every issue of "Telephone Engineer & Management" you'll find these

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Management NEWSLETTER

- **The Three Levels of Management Development.**
- **Basic Problems of Human Communications.**
- **Developing More Effective Recruiting Programs.**

DEVELOPMENT TECHNIQUE

MOST BUSINESS PROGRAMS for development of executives are not wrong, but they are incomplete, *Dr. Kenneth F. Herrold*, Professor of Education, Teachers College, Columbia University, said recently as he claimed they miss dimensions that are becoming more and more critical as the management job becomes increasingly complex.

DR. HERROLD IDENTIFIED three levels of development; knowledge and *understanding*, principles and *values*, and *behavior*. All three are necessary if individual growth is to be translated into behavior. Most management education, according to Dr. Herrold, has been in techniques and materials that reach the individual only on the level of understanding, with only occasionally an effort to say what this means in terms of principles and values. This *lack of attention to values*, he declared, *is the source of many mental health problems* — because of the difficulty of resolving conflicts among the various perceptions involved in the management process.

"WE HAVEN'T LEARNED HOW to take this understanding, which we have, and interpret it in terms of values and translate it into behavior," he said. "Management and labor are cutting each other's throats, not because they are really nasty people but because of unresolved conflicts that lead them to act in a way that they really are not."

THE PROBLEM OF MANAGEMENT DEVELOPMENT, Dr. Herrold pointed out, is more than slick words, generalizations, and formulae. It is a problem of *developing the individual's capacity to use his understanding in terms of his values by means of behavior in his setting.*

"Understanding," he said, "is worthless unless it leads to evaluation and behavior. Industry is spending millions on techniques that never get to the third level. As in any educational enterprise, management development must develop the whole man . . . . But, management, is *more than a person; it is a process.* It is not a man but a relationship between people engaged in a common enterprise. So we must ask ourselves — are we applying management development in a fragmentary manner or as a whole."

DIFFICULTIES OF COMMUNICATIONS

COMMUNICATING MEANING is such a difficult process that businessmen, instead of being angered by communications failures, should be grateful for those rare occasions when communications does lead to mutual understanding, *Dr. David Emery*, Conference Director, Executive Communication Course, American Management Association, said recently.

ONE OF THE BASIC PROBLEMS of all human communications, according to Dr. Emery, is that people are different. They have different habits, different knowledge, and as a result the same stimulus situation has different means to different individuals. *Each individual has his own personal "filter,"* which sifts and colors incoming information; therefore what Mr. A means by what he says is rarely if ever the same as what Mr. B understands him to mean.

BUSINESSMEN TEND TO TAKE IT FOR GRANTED, the speaker said, that understanding automatically results from communications in the absence of ill will or some physical barrier. This common assumption in business folklore is one of a number of *costly sterotypes that need to be cleared up* in the interests of good communications. Some of the other sterotypes were listed by Dr. Emery as follows:

(1) "*No news is good news.*" This is a common rationalization, he said, of executives who postpone appraisals of their subordinates' performance even though they know that problems exist.

(2) "*Let sleeping dogs lie.*" This is a frequent excuse of executives for not facing up to misunderstandings they find hard to express or solve.

(3) "*Children*" (*i.e. subordinates*) *should be seen and not heard.*" The man who adopts this attitude is simply cutting off his own sources of information.

(4) "*Let the facts speak for themselves.*" The trouble is, according to Dr. Emery that they don't; "filters" are always at work.

Please turn to page 20

the Stars of the show...

The NORTH ERICOFON, shown for the first time at the USITA Convention in October, has excited more comment, drawn more applause, and created more enthusiasm than any development in the Telephone Industry in years!

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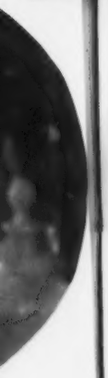


(Concluded From Page 17)

(5) *"The more communications the better."* This is simply not so, the speaker declared. Many businesses suffer from "reportitis" and other forms of overcommunications. "The aim of the A.M.A. Communication Course," he said, "is to increase the quality of communications and decrease the quantity by helping executives to transmit messages that really do communicate without necessity for repetition and follow up."

TO MAKE COMMUNICATIONS MORE EFFECTIVE — that is, understood, accepted, and acted upon — Dr. Emery suggested six essential ingredients:

(1) *Honesty of purpose.* The sender must analyze and understand his own immediate and long-range objectives.

(2) *A common interest* between sender and receiver — "You may have to look for it."

(3) *Mutual respect.* "People are amazingly sensitive to its presence or absence; without it true cooperation is unlikely."

(4) *A desire to understand.* "The sender should seek to learn what he communicates — at a minimum, the receiver's reaction. Usually the receiver will have additional information to give if he gets a chance. A good communicator is a good listener."

(5) *The message must help.* People may cooperate for a while out of politeness or dependency, but in the long run they will ignore messages that fail to help them. "Communicate for tomorrow not just for today."

(6) *The meaning must be clear.* This is not a matter of mechanics alone; it also depends on the first five principles.

RECRUITING COLLEGE GRADUATES

TO LICK THE SHORTAGE of engineers and other technical and administrative employes, companies that conduct recruiting in the colleges might do well to shift their sights a little — without, however, necessarily lowering them. This advice was given recently by *Karl A. Hill,* Associate Dean, The Amos Tuck School of Business Administration, Dartmouth College.

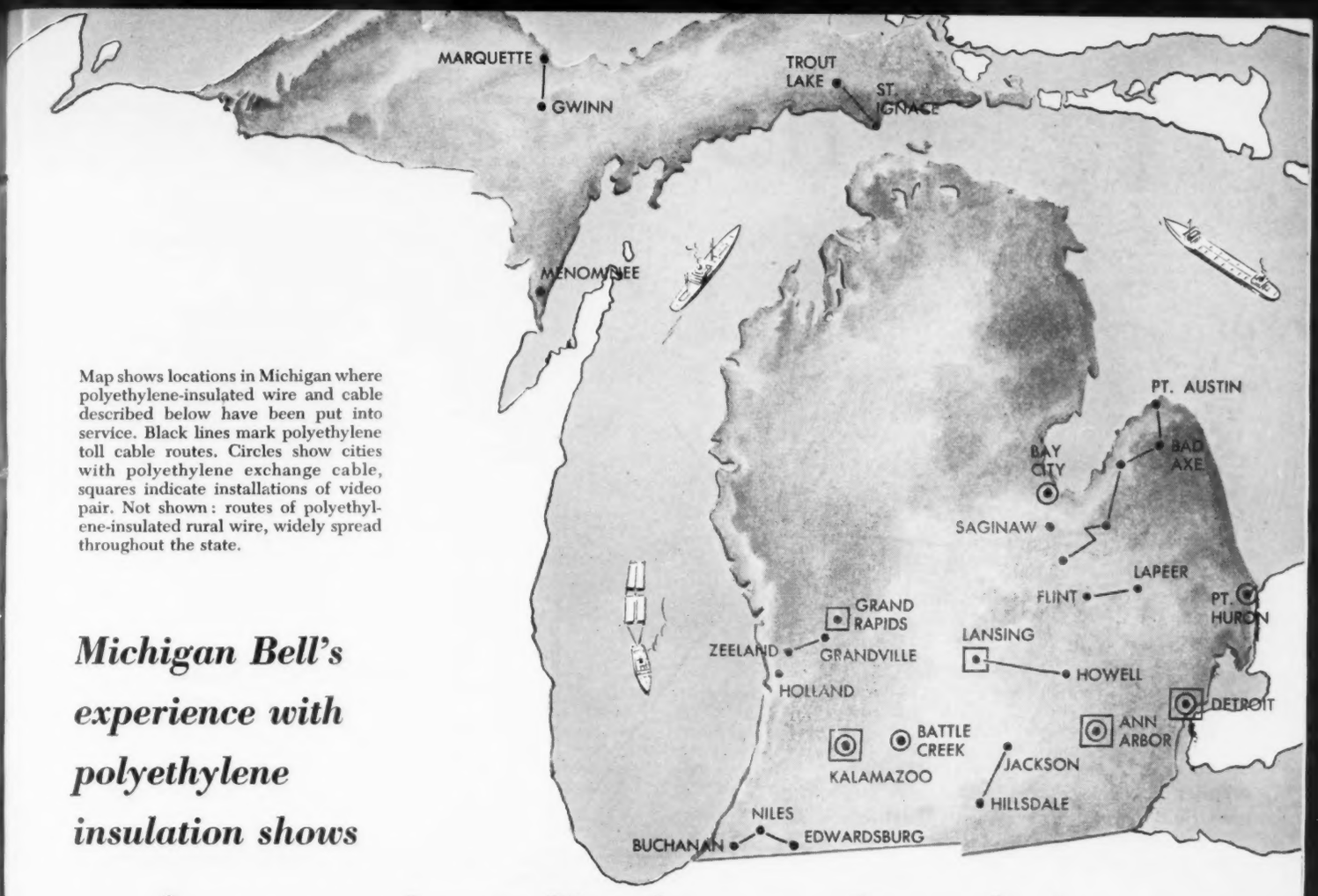
SOME COMPANY RECRUITERS, Dean Hill pointed out, "are so *selective in their judgments* that only the most outstanding student can obtain their approval. These men make much of the fact that they are recruiting future presidents and seem to overlook the rather elementary fact that only one person can serve in such a position at a time."

IN INTERVIEWING, the speaker recommended, *"don't put so much emphasis on the quick sale* by the student; the articulate man may have far less development potential than his less articulate classmate. *Don't automatically reject the lower-ranking students* without looking into the quality base of the group; some colleges have higher admission standards than others. *Don't turn down a student just because he reveals honest indecision about his career choice;* indecision should be expected in a student without previous industrial employment experience."

TO MAKE RECRUITING PROGRAMS more effective, Dean Hill suggested the following: "If you have a particularly rigid job specification, ask the college placement officer to *pre-screen candidates;* everybody will save time. *Limit on-campus interviews* to the company's geographical area; local students at distant colleges can be invited to visit the firm during vacations. If you have no personnel needs this year, *don't make a campus visit just to hold a place* in the college's future schedule; tell the placement officer you will be back next year. *Coordinate recruiting of departments and divisions* so that the student won't have to pass through too many interviews with the same firm. Encourage the kind of *relationship with faculty members and the college administration* that will keep them informed of the progress of recent graduates in the company; often they can help straighten out temporary on-the-job problems. *Let the colleges help in evaluating* your recruiting program; Work with college placement officers in developing *student guidance programs.*"

MANAGEMENT BOOKSHELF

"DEVELOPING EFFECTIVE SUPERVISORY NEWSLETTERS," by Robert Newcomb and Marg Sammons; 90 pages; $3.75. Order from American Management Association, 1515 Broadway, Dept. TE&M, New York 36, N. Y. The effective supervisory newsletter is an important device for strengthening communications within the company. With active interest and support of higher management, the supervisory newsletter can play a vital part in making the supervisor a member of management — in fact as well as in name. This new publication is a how-to-do-it manual for the executive who is planning to establish a supervisory newsletter in his company, as well as for the man who wants to strengthen and improve a newsletter already in existence. It presents basic principles and practical suggestions which cover all phases of newsletter development: initial planning, getting supervisory participation, preparing copy, devising a format, production, distribution, and evaluation.



Map shows locations in Michigan where polyethylene-insulated wire and cable described below have been put into service. Black lines mark polyethylene toll cable routes. Circles show cities with polyethylene exchange cable, squares indicate installations of video pair. Not shown: routes of polyethylene-insulated rural wire, widely spread throughout the state.

Michigan Bell's experience with polyethylene insulation shows

savings on installation and maintenance

Starting in 1951, more than 2500 miles of polyethylene-insulated wire and cable have been put into service in various locations served by Michigan Bell Telephone Company.

Toll cable. About 210 miles of cable with alpeth sheath (aluminum and polyethylene) and polyethylene-insulated conductors were installed between 1951 and 1956. It was found that this cable is less susceptible to noise and that longer repeater sections were practical because attenuation at N-carrier frequencies (about 128 KC) is less with polyethylene than with conventional insulations. Since the first installation was made, no lightning troubles have been reported, and at points where the cable sheathing was damaged by gunshot during the hunting season, the conductors remained unaffected by moisture.

Exchange cable. Some 395 miles of exchange cable in sizes from six to 51 pairs have been installed since 1952. Trouble frequency is "unbelievably low." Sections of the lightweight polyethylene cable were buried 12 to 16 inches in light soil, using a wire plow (W-16) pulled by a line construction truck. The use of such equipment for cable work was an innovation at the time, with savings in cost of about 35 per cent compared with open wire pole installations.

Rural wire. A total of 1950 miles have been installed between 1952 and 1956. Early field trials were made with 5-pair, 19 gauge polyethylene-insulated facilities, cabled around an extra-high strength steel wire .109 in. in diameter. These early installations totalled 150 miles. In 1953, Michigan Bell standardized on a 6-pair facility with 19-gauge polyethylene insulation and pvc jacketing. More than 1800 miles of this rural wire construction are now in place. This construction is less vulnerable to wind and ice loading. Cost is 40% less than with former method of placing six circuits of open wire.

Video pair. About 125 miles of video cable pairs have been installed in various cities since 1950, to establish local television channels: for example, between the telephone office and a program pick-up point such as a theater or sports stadium. The 16-gauge copper conductors are insulated with expanded polyethylene. Use of this material indicates that attenuation is about half that for pairs insulated by other methods, and that repeaters can be spaced at double the intervals.

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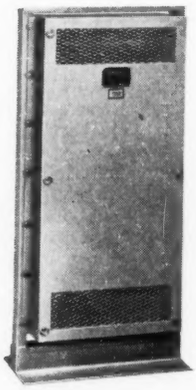

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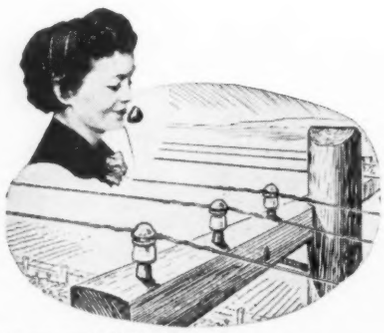

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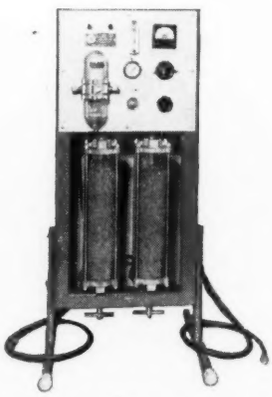

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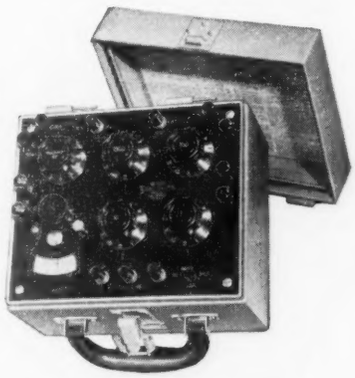
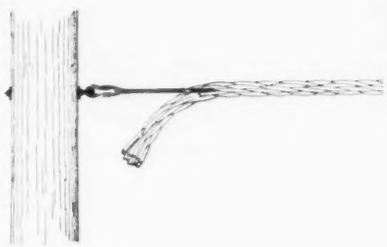


Shallcross No. 6100 Wheatstone Bridge. This portable instrument is designed to measure any resistance from 1 ohm to 1 megohm, locate grounds, crosses, opens and shorts by the Murray, Varley, Hillborn or Fisher Loop and Capacitance tests. Can be operated by repairman wearing gloves. SHALLCROSS MFG. CO.



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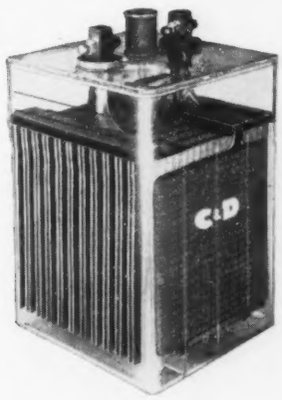

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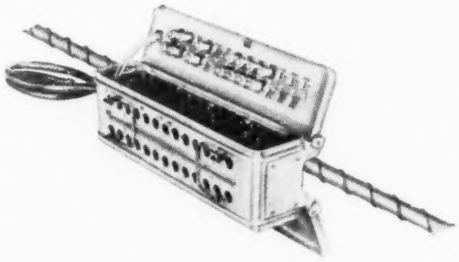

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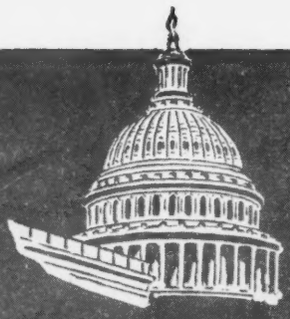

REA Advisors Meet

PRACTICAL METHODS of combatting the shortage of qualified engineers available for the Rural Electrification Administration farm telephone program, particularly through using technically-qualified telephone borrowers and their personnel to do work ordinarily performed by engineers, formed a center of discussion at the first meeting of the new industry advisory committee with REA Administrator David A. Hamil. (The makeup of the new industry advisory committee has been reported in this space previously: *Fortnightly Telephone Engineer*, 11/1/56, *p.* 8.)

Mr. Hamil, at the close of the meeting, reported that the advisory group had named a subcommittee to consider the engineer shortage problem during the sessions, and to make later recommendations which will be submitted to the membership of the industry advisory group. Another meeting of the committee is expected after the first of the year.

Since the meeting agenda was concentrated principally on topics raised by Independent telephone organizations answering REA's questionnaire on the telephone program, engineering matters received principal attention. The two criticisms mentioned most often in the questionnaires — 8 percent in each case — were that pre-loan engineering is too expensive, and that rigid specifications and engineering standards cause plant costs to be too high. The advisory committee, it was reported, criticized continued REA adherence to a policy of compulsory competitive bidding for borrowers' purchases of central office equipment.

The question of equity capital requirements probably would have received extensive attention if time had been available. Mr. Hamil commented that the subject is one which will have to be considered thoroughly, with one possibility being that cooperative members providing equity be permitted to make a down payment and pay the remainder later. REA equity capital requirements for co-ops are $50 each for new subscribers and $25 for existing subscribers, while a commercial company must have 10-15 percent of its assets, after inclusion of the REA loan, in equity capital.

Generally, the consensus of the committee was in disagreement with the criticisms of the REA loan program mentioned in the questionnaire replies. It did not go along with the 8 percent who said that specifications are too rigid and costly, pointing out that REA is lending money for 35 years and that "patching up" old systems is not practical.

Discussing the comment that smaller loans would be preferable (7 percent of those replying), the committee supported the REA policy that a unit must be big enough to be financially sound, and that smaller loans, except in unusual circumstances, are useful only for additions to already-modern systems. REA's policy, Mr. Hamil said, is that usually about 500 telephones is a desirable minimum for a borrower. The group disagreed also with the comment (5 percent) that REA assumes too much control, and said any deficiency probably has been in explaining to prospective borrowers just how much control the agency does exercise.

Named Chairman of the industry advisory committee was Daniel B. Corman, executive vice president of the Northeastern Telephone Corp., London, Ky., and vice president of the Kentucky Telephone Association. Members of the engineering subcommittee are Harold L. Ericson, Hector, Minn., chairman; Mr. Corman; Fred R. Harris, Jackson, Mich.; Dale D. Jacobson, Highmore, S. Dak.; and Edward D. Hildreth, Alexandria, Tenn.

Important Acquisition Case

THE POSSIBILITY impends of an oral argument before the Federal Communications Commission on one of the most significant telephone acquisition cases to be before the Commission in some time, with submission of exceptions to an initial decision.

The Communications Workers of America and the FCC Common Carrier Bureau staff filed the exceptions to a ruling by Examiner Jay A. Kyle looking toward approval of the acquisition by the Southwestern Bell Telephone Co. of 18 exchanges of the Southwestern States Telephone Co.

In its filing, the FCC staff did not reach a conclusion about the ultimate result of the decision, but limited itself to certain specific findings in the decision, related principally to extend area service and statements about the views of the affected employes.

(Concluded on page 26)

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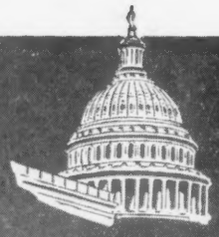


(Concluded from page 24)

CWA, which intervened against the proposed transaction in the hearings, submitted 31 separate exceptions. The union said that "The basic defect of the initial decision . . . is the failure of the examiner to consider and weigh the detrimental effect which the acquisition of the 18 exchanges will have on the employes involved, as a necessary and substantial factor in determining whether the acquisition is or is not in the public interest."

The total transaction also involves acquisition by Southwestern States of 12 exchanges of a Southwestern Bell subsidiary, a portion of the agreement not up for FCC approval.

Bell Upholds Pension Plan

THE UNITED STATES Supreme Court has been asked to deny a petition of several Bell System pensioners who are seeking review of lower court decisions rejecting their suit against deduction of half of social security benefits from their pensions.

In a consolidated proceeding which is expected to get the attention of the high court within the next few weeks, the American Telephone & Telegraph Co., Illinois Bell Telephone Co., and Western Electric Co. declared in a brief filed with the court that the "offset" type of pension plan does not violate the Social Security Act, that it is generally practiced in "numerous other private pension plans," that Congress contemplated the "offset" plan in passing social security legislation, and that the pension plans of Bell System companies are more generous than many others found in US industry.

The case involves appeals of seven pensioners who have asked the Supreme Court for a writ of certiorari in a proceeding decided by the US Court of Appeals for the Seventh Circuit in June, upholding a lower court verdict which also turned down the pensioners' suit.

Declaring that the "offset" practice has been "adopted and accepted without question in numerous other private pension plans," the Bell companies stated in their brief that its purpose is "to avoid duplication of costs and benefits that would otherwise exist between private pension plans and the government system."

New Bargaining Offer

IN ANOTHER development in the general area of pensions and benefits arousing considerable interest in the communications field, the Wisconsin Telephone Co., in its bargaining with unions on new contracts, has announced that as part of its offer to the unions it is proposing a group life insurance program for its employes with the company bearing a substantial part of the cost.

It is similar to others proposed by other Bell System companies. The Communications Workers of America said it is studying offers made by the Northern Electric Co. (Canadian manufacturer), Michigan Bell and Ohio Bell Telephone Co's., Bell Telephone Laboratories, and Western Electric Co. The union said it was asking for clarification of some features of the program.

The proposal set forth in Wisconsin calls for a group life insurance program separate from employes' pensions, disability benefits, and death benefits. It would be available to all employes who have completed six months' service and would become effective provided 75 percent of the eligible employes enroll.

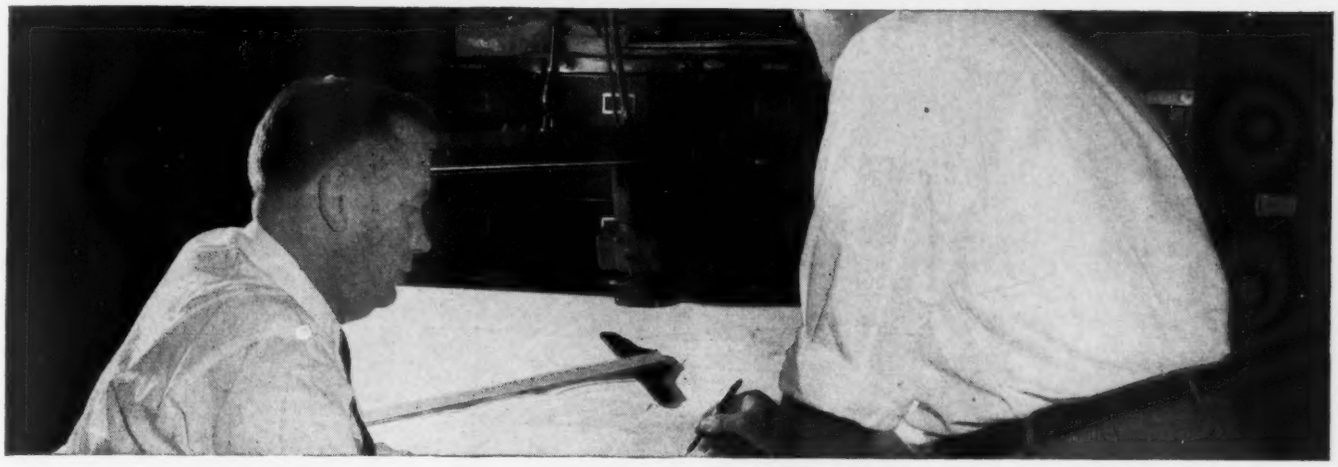
Main features of the program would be: life insurance equal to an employes basic annual pay rate, rounded to the next highest even thousand dollars; double indemnity for accidental death for active employes; and no medical examination for those who enroll promptly when the program becomes effective or when they become eligible. For the first $1000 of insurance, the employe would make no contribution, but for each additional $1000 of insurance he would pay 50 cents a month, with the company defraying the balance of the cost.

Separations Manual Revision

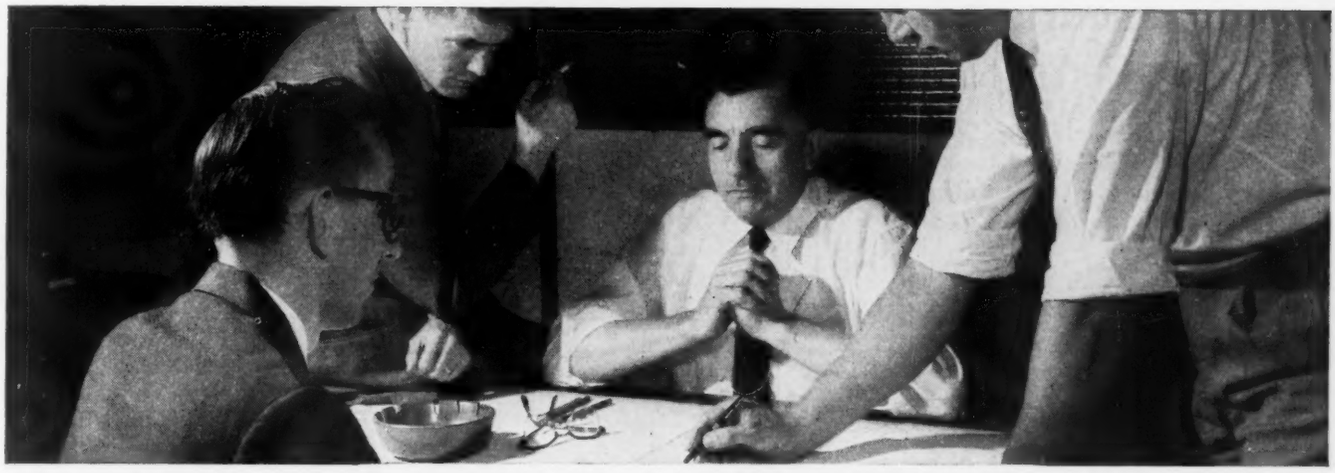
THE NATION'S state regulatory commissions, as well as the FCC and the telephone industry, have been asked to submit comments on revision of the telephone separations manual, in line with a resolution passed at this year's convention of the National Association of Railroad & Utilities Commissioners. In a letter from Chairman Matt L. McWhorter of the NARUC Special Telephone Committee, it was made clear that "we construe the sense of the resolution adopted in July, 1956, as limiting the revisions to those which conform with the broad principles incorporated in the present manual as amended by the Charleston and Modified Phoenix Plans."

This position apparently would bar consideration of revising separations principles to take into account such industry developments as direct distance dialing, etc.

Here are CARRIER* systems



engineered by telephone men



for telephone men

The engineers you'll meet at Automatic Electric and Lenkurt *know* the telephone industry because they are telephone men themselves. With first-hand knowledge of telephone operations, these men are in a position to help solve the transmission needs of telephone companies —regardless of size. They *specialize* in the engineering, manufacture, and installation of systems adapted specifically to meet telephone toll plant requirements.

And, because they have available a complete line of systems, they'll be able to recommend the *best* system for *you* . . . whether it's carrier telephone equipment for open wire, cable, or radio . . . or radio equipment itself. Why not give them a call? You'll find they talk your language.

Address: Automatic Electric Sales Corporation, 1033 West Van Buren St., Chicago 7, Illinois (HAymarket 1-4300). *In Canada:* Automatic Electric Sales (Canada) Ltd., Toronto. *Offices in principal cities.*

* They're **LENKURT'S** MULTI-CHANNEL COMMUNICATION SYSTEMS, of course.

AUTOMATIC ELECTRIC

Originators of the dial telephone • Pioneers in automatic control

GENERAL SYSTEM INDEPENDENT

Loan Reduction Plan

Tidewater Telephone Issues New Stock

LAST MONTH Tidewater Telephone Co., Warsaw, Va., offered its preferred and common stockholders 14,738 shares of additional Common Stock (par value of $20 per share) at the subscription price of $23.50 per share. The issue was written by four Virginia investment houses and offered to the public at $24.50 per share, subject to rights of its stockholders. The net proceeds from the sale of the shares and the sale of $250,000 principal amount of Convertible Debentures maturing August 31, 1976, will be applied by the company to the reduction of its temporary bank loans which were incurred to make capital improvements and additions to its telephone system.

Tidewater Telephone is one of the largest Independent telephone companies in Virginia, serving 11 counties and parts of three counties in the upper Tidewater section of Virginia. The company furnishes service to its subscribers through 24 dial exchanges, most of which are connected with each other over company-owned toll circuits passing through a toll center at Warsaw, Virginia.

The company was organized in 1945 to succeed to the business of East Coast Telephones, Inc., and since that time the number of its telephones has increased from 3,560 to 14,854 at June 30, 1956. The company's net plant has increased from $2,881,000 at December 31, 1952, to $5,244,000 at June 30, 1956. Operating revenues increased during that period from $765,828 to $1,258,905. On June 30, there were 78,224 shares of Common Stock outstanding, and for the 12 months then ended earnings per share of Common Stock were $1.98. The current annual dividends are $1.40 per share, payable quarterly. On June 30, the company had 953 stockholders, most of whom reside in the territory it serves.

In order to meet a continuing demand for more and better telephone service Tidewater Telephone Co., adopted a construction budget for this year involving expenditures of approximately $1,187,000 and President Rodney M. Coggin stated the company expects to spend for construction approximately $1,137,000 in 1957 to expand and improve its telephone service.

$60 Million Issue Priced at 3.90%

Southern Bell Debenture Bids Wide Apart

A WIDE divergence in pricing options on AAA-quality utility debt issues was evidenced last month in bids and reoffering plans of two syndicates which sought $60 million 27-year 4 per cent debentures of Southern Bell Telephone & Telegraph Co.

The winning group, headed by Halsey, Stuart & Co., Inc., priced the issue for public sale at 101.66, to yield 3.90 per cent to maturity. The other group, headed by Morgan, Stanley & Co., would have priced the debentures to yield 3.94 per cent to maturity if it had won, it is understood.

Halsey, Stuart & Co., Inc., took the debentures on its bid of 100.8699. The bid submitted by Morgan Stanley & Co., was 100.2612.

Net proceeds from the sale of the debentures will be used by the company to repay outstanding advances from its parent organization, American Telephone & Telegraph Co., which are expected to approximate $51 million at the time the proceeds are received. The balance of the proceeds will be used for general corporate purposes, including extensions, additions and improvements to its telephone plant.

The debentures are to be redeemable at regular redemption prices ranging from 106.16 to par, plus accrued interest.

"Moderness for Service" Features New Exchange

WITH THE RECENT completion of a modern exchange and office building in Seymour, the Indiana Telephone Corporation's latest expansion project is a classic example of today's trend towards a "new look" in the telephone industry for efficient service and public good.

Modern in concept as well as in design, the Seymour exchange will bring a fully automatic dial system to an increasing population of over 12,000. This new system will give improved local and toll service, especially to Jackson, Jennings, Scott and Washington Counties.

The new single story Seymour ex-

change, located on the corner of Walnut and third Streets contains some 12,000 square feet of spick-and-span floor space. Of steel, brick, concrete and stone construction, the building is as fireproof as modern science can provide.

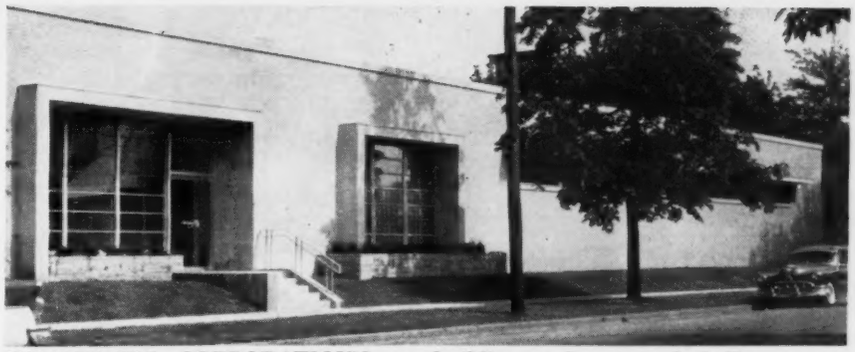
Indianapolis Architect Alden Meranda created a plan for the future for this handsome gray yellow brick-faced building, including a "picture window" between the front lobby and the main switchboard room. A spectacular view of the switching equipment will greet all who enter the lobby through the handsome glass and stone main entrance. To the left in the lobby will be placed booths for pay-station use and a conference room for salesmen. To the right of the lobby will be the cashier's office, and beyond, the main clerical and executive offices.

E. S. Welch, operating vice president, and several other Indiana Telephone key officials are already located in a double row of offices on the east side of the building. The offices were so planned that in the future, space will be available for office, switching equipment or switchboard expansion. Provision has been made in all ways to take care of the expected growth of Seymour's telephone needs.

A second entrance, equally as impressive as the main entrance, is provided on Walnut Street for exclusive use by the long distance operators. This access leads to a comfortable lounge and locker room on one side and the long distance switchboard room on the other. A third entrance for other employes is located on the east side of the exchange, off the employes parking lot.

Cable and splicing for the equipment installation phase of this new operation is nearly finished, according to Mr. Welch.

"When the new dial exchange goes into service this fall, the building, the switching equipment and accessories, and new cabling and overhead telephone lines installed to handle the increased service capacity will be a part of our contribution to the steady growth of one of the finest communities in our great state," Vice President Welch explained. "A telephone exchange is really the heartbeat of the business, social and political life of any city. We aim to keep this one beating with a strong and healthy pulse."



INDIANA TEL. CORPORATION'S new building at Seymour, Ind. Entrance at left to be used by long distance operators. A comfortable lounge is behind windows at left, window in center is for long distance switchboard room.

Price Change in '56 Unlikely

Copper Relatively Ample Again

AFTER AN EXTENDED period of shortages, the world copper markets have entered a period of relatively plenty and, perhaps even more important, may look forward to relative continuity of supply.

The New York *Journal of Commerce* reported last month that pacts which will run through mid-1959 have been signed between major producers and labor. In Chile, according to well-informed sources, it appears the Government will take a more realistic approach to its twin problems of inflation and copper production. In the Rhodesian belt, an effort toward solution of the African daily-paid worker problem is being sought in a better atmosphere than prevailed in late Summer and early Fall.

In addition, producer and fabricator stocks are at very high levels, while demand has eased and output has risen.

During January-August, 1955, production of refined copper in this country amounted to 1,068,615 tons as against 921,919 tons in 1955, when there were strikes in July and August.

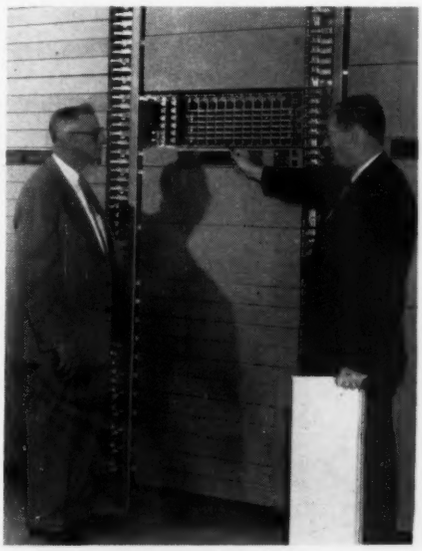
In the same eight-month period of 1956, consumption rose slightly to 962,547 tons from 934,092 in 1955, reflecting heavier sales by fabricators in the last quarter of 1955 than in the last quarter of 1954. On the other hand, new sales to consumers in the first eight months of 1956 at 891,528 tons were sharply below the 1,081,164 tons sold in the same period of 1955.

For the year, domestic mine output of copper was recently estimated at 1,165,000 tons, a 12 per cent increase over 1955.

At the price levels which have been obtained in the past 18 months or more, and those which can be projected for the next several months, it does not seem likely that production is going to be curtailed.

At the start of 1956, in a speech delivered before the National Industrial Conference Board, James Boyd, vice president-exploration, Kennecott Copper Corp., quoted R. L. Prain, chairman and president, Rhodesian Eelection Trust, as estimating that "50 per cent of the world's production can be produced below 15¢ per pound, 75 per cent below 17¢ and 90 per cent below 25¢, but costs continue to rise."

"While all but 10 per cent of the free world's production could be maintained without loss at approximately 30¢ production would be affected by voluntary curtailment near



ERIC BROOKE, assistant director of development, North Electric Co., discussing progress of the equipment installation with E. S. WELCH, operating vice president of Indiana Telephone Corp., Seymour, Ind.

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Notice the curve of the blades . . . specially engineered to expand easily into the undisturbed earth. When in place, the blades exert an *outward* as well as upward pull for extra holding power.

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that price by producers with some marginal production," Mr. Boyd said.

Meanwhile, as a result of expansions and new development of ore bodies, free world primary capacity, which was estimated at 2,928,000 tons in 1955, is estimated to be due for expansion by 229,500 tons in 1957, according to the Copper & Brass Research Assn.

Unfortunately, the history of copper availability in the last two years has been such as to make the market — and demand — peculiarly susceptible to psychological pressures.

"It could, for example," said the Journal of Commerce, "be argued logically from the statistics that there was always sufficient copper on hand in the U. S. for actual use."

At worst in 1955, fabricators had 1,008 tons in the cupboard in August, in addition to their working stocks, but demand was working stocks, and demand was "frantic" then, for those visible supplies were less than 1 per cent of unfilled orders at the end of that month.

At the slightest threat to supplies, consumers have tended to come heavily into the market, and they have zealously protected their lines of supply even when to do so involved paying some premium to the major producers for the metal as compared with smelter prices.

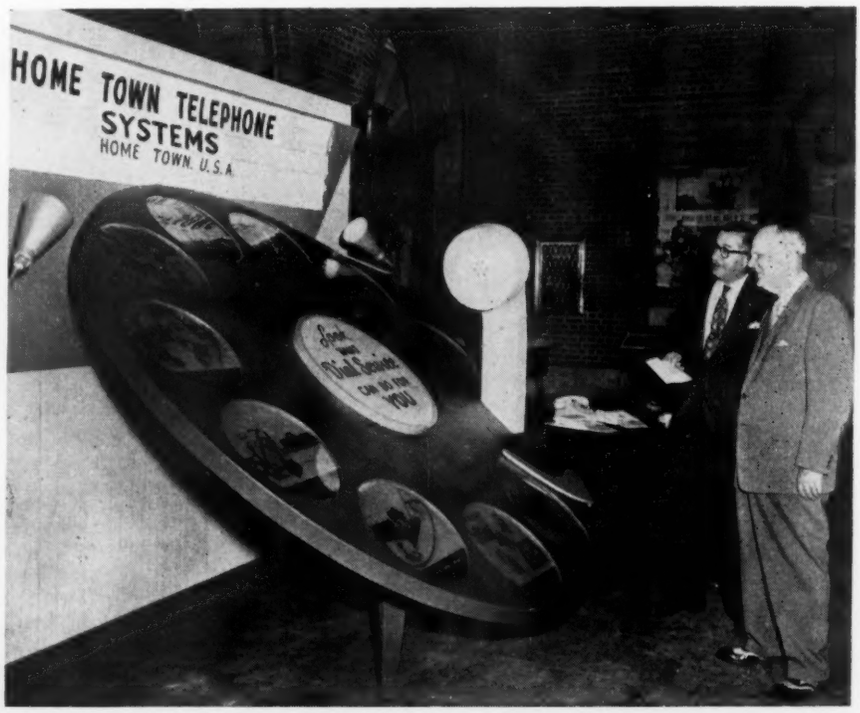
Apart from the occurrence of such psychological pressure in the market — which cannot be foretold — the pattern of buying for consumption is, at present, hesitant, both here and abroad, with the big factor continuing to be 1957 model automobile industry sales and their impact on the copper fabricators' order books.

Certainly a factor in reduced fabricator buying has been their high stocks, both absolutely and in relation to orders.

At the end of August, these stocks were 457,679 tons compared with unfilled orders at 221,975 tons, while, at the start of 1956, stocks were 376,753 tons compared with orders of 305,942 tons.

Another factor has been the increase in producer stocks of the metal, both here and abroad. In the U. S., these stocks at 96,450 tons at the end of August, 1956, were nearly twice as large as the 49,350 tons a year earlier. In the free world, stocks as reported by the Copper Institute, were 315,243 tons versus stocks of 230,022 tons at the end of August, 1955.

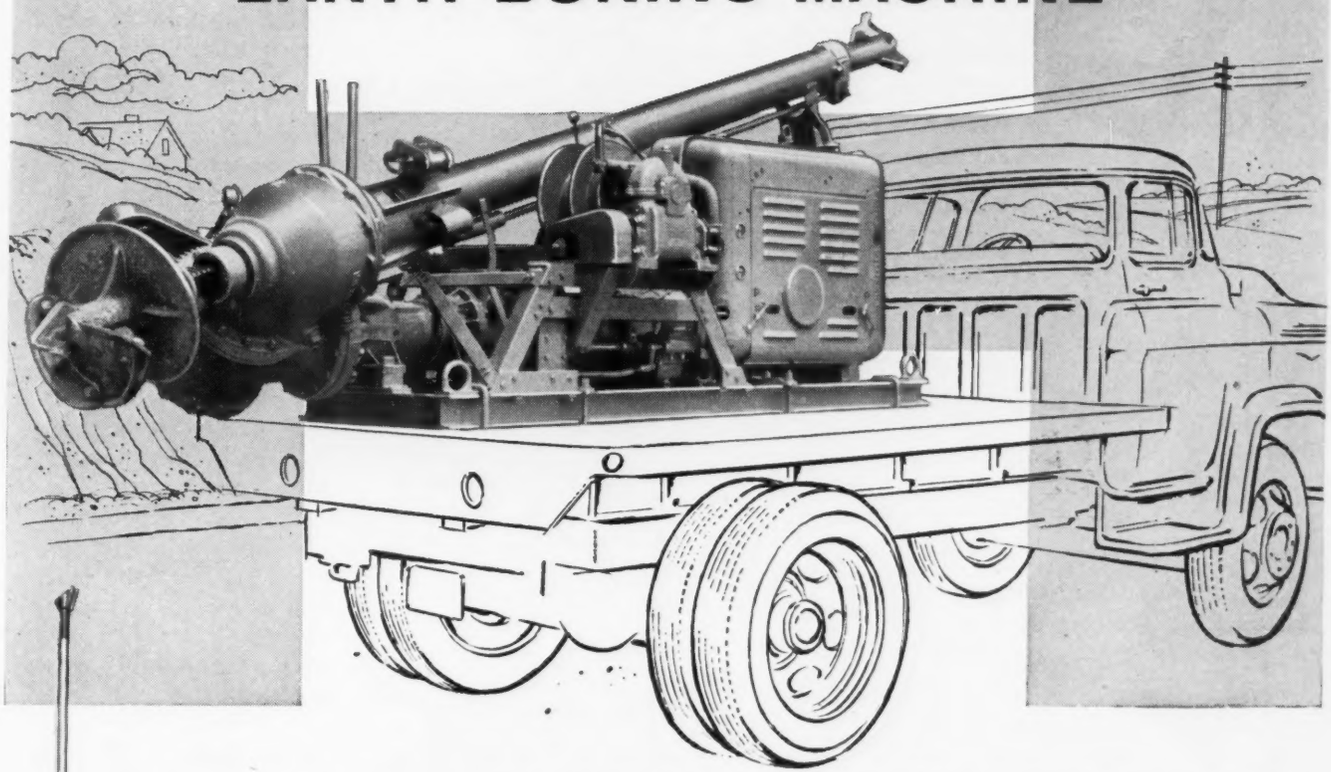
To be sure, a certain shift from copper to substitute materials is con-

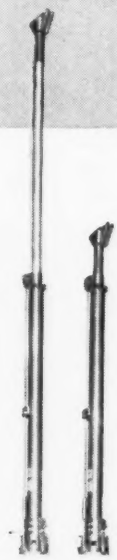


NEW REA TELEPHONE EXHIBIT: This exhibit, complete with promotional leaflets and five color telephones, was prepared by REA for use by borrowers which need help in getting line fill in certain rural areas. Here, Assistant REA Administrator J. K. O'SHAUGHNESSY (right) and RALPH HYLE, president of the Lycoming Telephone Company, Pine Grove, Pa., examine the exhibit before it goes on tour.

easy to put on . . .
easy to take off!

HIGHWAY'S SKID-MOUNTED
EARTH-BORING MACHINE





Exclusive!

Highway Telescoping Derrick

The telescoping derrick (3500-lb. capacity) can be extended 28 ft. 6"—derrick retracts for convenience of operation. Available as optional equipment on the Model "HC" and "HCMS" machines.

Digs the Hole and Sets the Pole in any Soil!

Here's a heavy-duty earth-boring machine with mounting versatility seldom found in such a rugged unit. Highway's HCMS skid-mounted earth borer can be truck-mounted, tractor-mounted, or mounted on almost any type of conveyance.

ECONOMY OF OPERATION — The versatile skid-mounted unit eliminates costly mounting charges. The entire machine can be quickly mounted or removed from the platform, allowing the vehicle to be used for other work.

A COMPLETE UNIT — the HCMS is integrally assembled with clutch, transmission and a long-life Continental Red Seal 226-cubic-inch engine. It digs holes from 9" to 36" in diameter in any soil condition — even in rock when equipped with a special auger.

DIGS AT ANY ANGLE UP TO 90° at right angles to the vehicle and up to 60° in line with it. Leveling mechanisms permit quick adjustment to dig vertical holes regardless of vehicle position. Your choice of platform or ground control allows full visibility and automatic safety.

SETS BIG POLES with your choice of integral winch and derrick or completely automatic telescoping derrick.

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toll calls TIMED TO THE SECOND *Automatically*

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Photograph courtesy Lincoln (Neb.) Telephone and Telegraph Co. and Automatic Electric Sales Corp.

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tinually taking place as a result of both tight supplies and price considerations, but the shift is not so quick as to furnish a reasonable consideration in discussion of any short-term outlook.

"There has been used in the United States during the past five years an average of one and thirty-seven hundredths pounds of copper for each hundred pounds of steel," Roy H. Glover, chairman, Anaconda Co., stated in mid-August. "This ratio holds steadily, even in spite of substitutions, such as aluminum."

The 40¢ producer quotation now in effect has been testing ever since it was posted in July.

Sales of copper to fabricators improved in August and reportedly have improved further since then, but certainly the sense of the market has been that there has been no big push for supplies.

The consensus among observers, nevertheless, appears to be that the producer quotation is going to hold through the end of this year, since consumers' needs rather than price will determine their buying.

Whether the major producers will continue to quote 40¢ after the turn of the year depends on whether renewed demand develops in such volume as to absorb increased output and bring total stocks into better relationship with orders.

Sky-Scraper Tram Helps Build Link

A $250,000 AERIAL tramway was needed to conquer a brutish British Columbia mountain during the building of one of the trans-Canada microwave relay towers. B. C.'s relay route starts at the 6,965 ft. Morrissey Ridge, at Fernie, and leap-frogs from mountain to mountain to a 150-ft. tower on a building in Vancouver.

Engineers of the Northwest Telephone Co., the company engineering the B. C. section, consider Dog Mountain, near Hope, B. C., the toughest of the 13 sites where the towers are to be built. Rising 4,916 feet over the Fraser River, access to the top by road proved impossible. The aerial tramway was considered the only method of reaching the summit with material and manpower for the relay station.

The tramway that has now been built covers a greater distance upwards than any on the continent. The

Copperweld LINE WIRE

TRADE MARK

keeps upkeep down

When Copperweld* Line Wire goes up, it's up to stay. Non-rusting Copperweld has the permanent high strength to resist even the worst weather conditions year after year. Thus, you get longer service life—lower operating costs. At the same time, you get better talking qualities, because Copperweld has the best electrical conductance of any long-span conductor. What more could you ask for in a line wire?

*Trade Mark

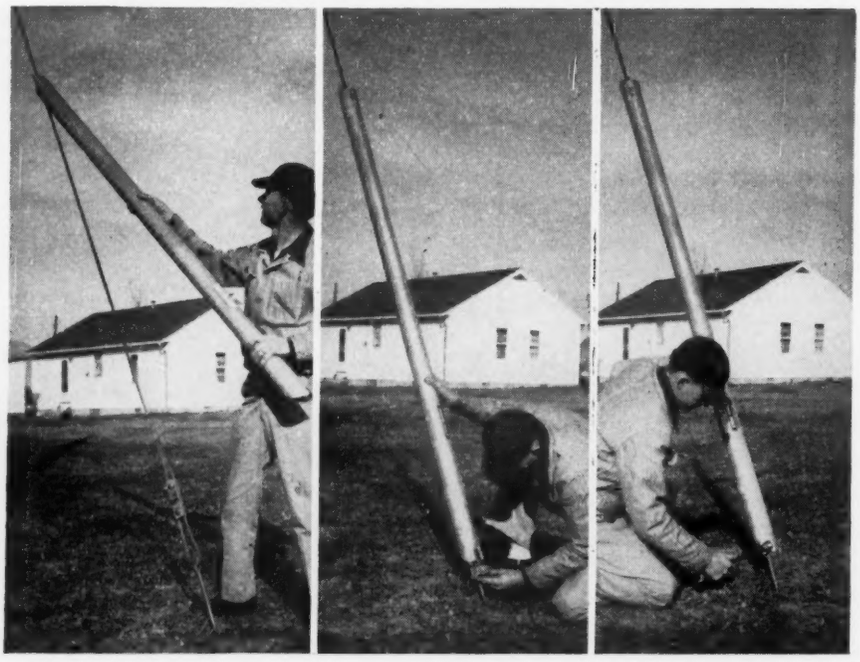
COPPERWELD STEEL COMPANY
WIRE AND CABLE DIVISION *Glassport, Pa.*

For Export: COPPERWELD STEEL INTERNATIONAL COMPANY, New York

SOLD BY LEADING DISTRIBUTORS

Tighten only 1 easy-to-reach bolt to install the CHANCE MONO-BOLT GUY GUARD

When a groundman installs a Chance Mono-Bolt Guy Guard, he has only three things to do:



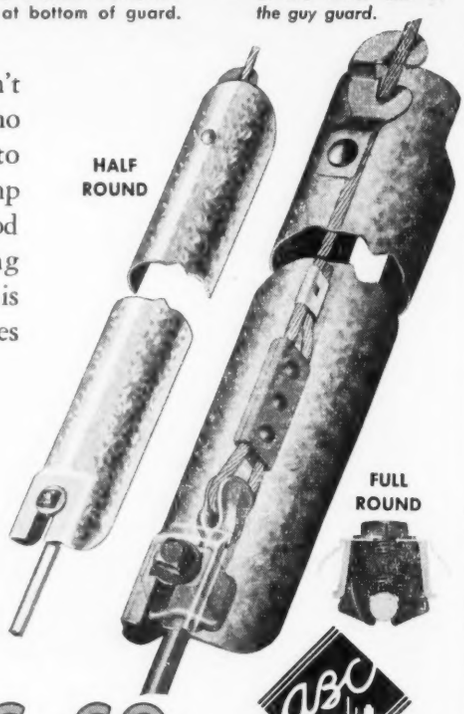
1 Slip the flanged hook over the guy wire.

2 Place clamp on anchor rod and slide it into the slot at bottom of guard.

3 Tighten this one bolt at the *lower end of the guy guard.*

It's that easy—your men don't have to be extra tall—there's no stretching for high bolts to tighten . . . the Mono-Bolt clamp securely grips the anchor rod with a firm 3-point gripping action . . . only a single wrench is needed. Easy installation makes for proper installation.

Heavy gauge steel guard is hot galvanized for long life and high visibility.



Mono-Bolt Guy Guard comes in half or full round construction, in 7 and 8 foot lengths. Fits any size rod from ½" to 1¼".

CG56-9

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ABC INDUSTRIES

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cable for the three-passenger car is 11,800 ft. long. The tractions cable is 22,000 ft. long. Both are single lengths made in Vancouver.

Constant tension on the supporting cable is maintained by two concrete weights. The one at the summit weighs 12½ tons and the one at the base, 34 tons.

So. New England Tel. Drops Issue Plan

THE CONNECTICUT Public Utilities Commission has turned down an application by Southern New England Telephone Co. for permission to sell 679,012 shares of its common to current holders at $30 a share.

The commission, which has not yet spelled out its final decision in detail, indicated that it thought the discount of the offering price below the current market of about $39.50 was too great and did not yield enough to the company. A 25 per cent allowance is not necessary to assure success, the Commission stated. It urged that the stock be priced to stockholders at $32 a share.

Company directors, perhaps remembering that an offer to stockholders at $33 a share last year was "sticky," decided to defer the offering and to turn to banks for short-term interim borrowings until a new financing plan can be developed.

The company, which is controlled by American Telephone & Telegraph Co., would have raised about $20 million from the sale of the shares. American Telephone, holding 1,173,696 shares or 21.6 per cent of currently outstanding stock, had planned to sell its rights at competitive bidding under a policy which prevents the parent from exercising rights to stock whenever the option price is above par.

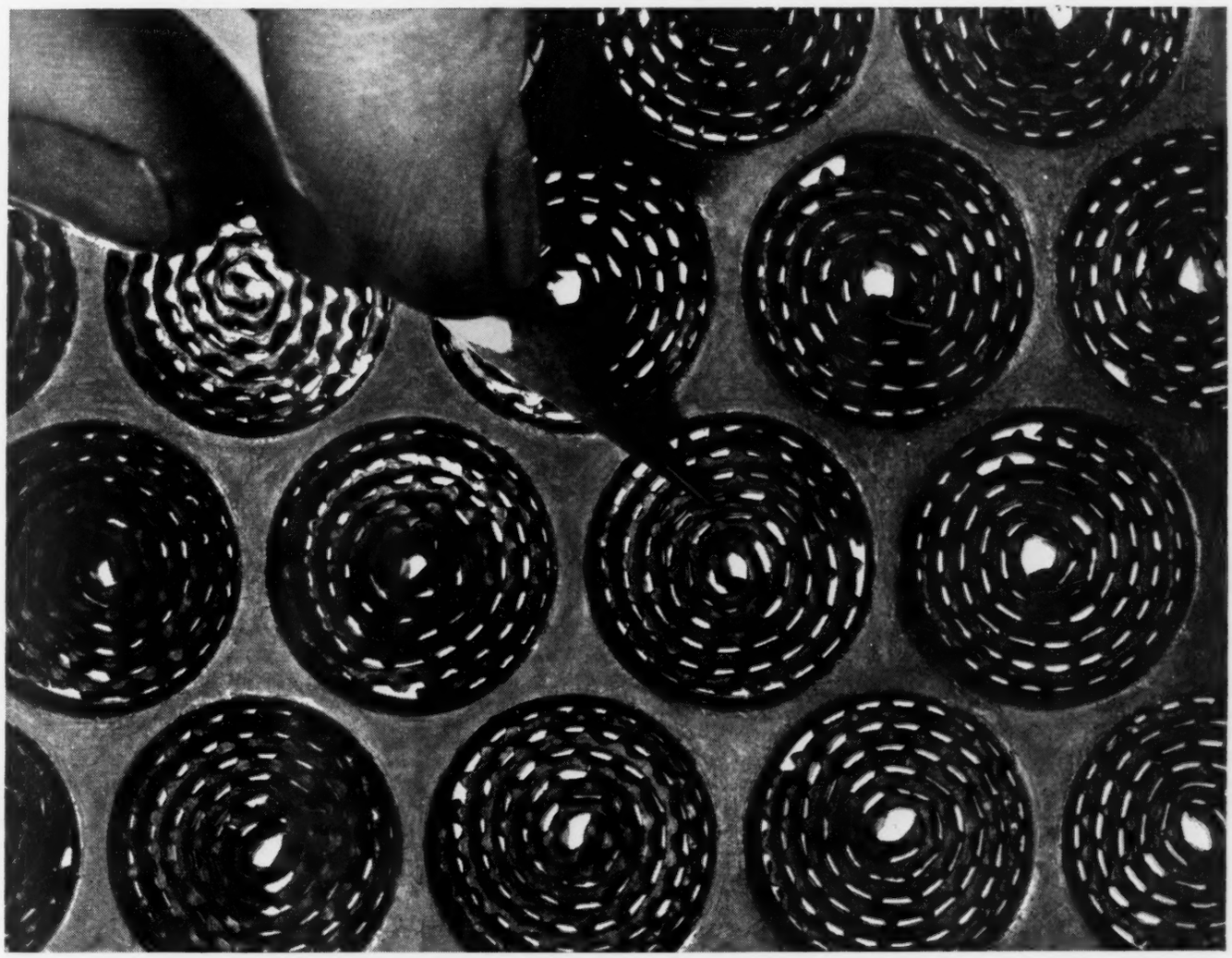
REA Names V. P. Russell Florida Field Representative

VIRGIL P. RUSSELL located in Washington, D. C. as head, accounting section REA Telephone Program has been transferred to Florida as field representative, operations, to assist REA Telephone borrowers in that state with accounting, management and operation matters.

Mr. Russell was employed by REA in December, 1949 as consultant to establish telephone accounting procedures. He began his career in the telephone industry in 1920 as an ac-

EXIDE-MANCHEX BATTERIES

For telephone applications



Open "windows" for electrolyte insure immediate power

TELEPHONE BATTERY. Models available in capacities from 8 to 960 ampere-hours. Write for Bulletin No. 4852.

The reason Exide-Manchex Batteries outperform other Plante-type batteries is the way they're made. For example, of all batteries on the market today, only the Exide-Manchex gives free access of electrolyte all the way into the center of the positive plate.

You can see this in the picture of the Exide-Manchex positive plate shown above. Heavily corrugated lead strips are rolled into spiral buttons and forced into the positive plate grid. Held up to the light, an Exide-Manchex positive plate shows thousands of tiny openings over its entire surface—openings that pass completely through the plate. Wherever light is, electrolyte goes. Each opening is a tunnel that gives the electrolyte free access to the entire effective surface area of the Exide-Manchex positive plate—hence the power is there when called for.

This unique construction is only one of the many reasons Exide-Manchex Batteries prove so superior in so many applications. When you order batteries for floating service applications, or the equipment that requires such batteries, be sure to specify Exide-Manchex. Write for detailed bulletin. Exide Industrial Division, The Electric Storage Battery Company, Philadelphia 2, Pa.

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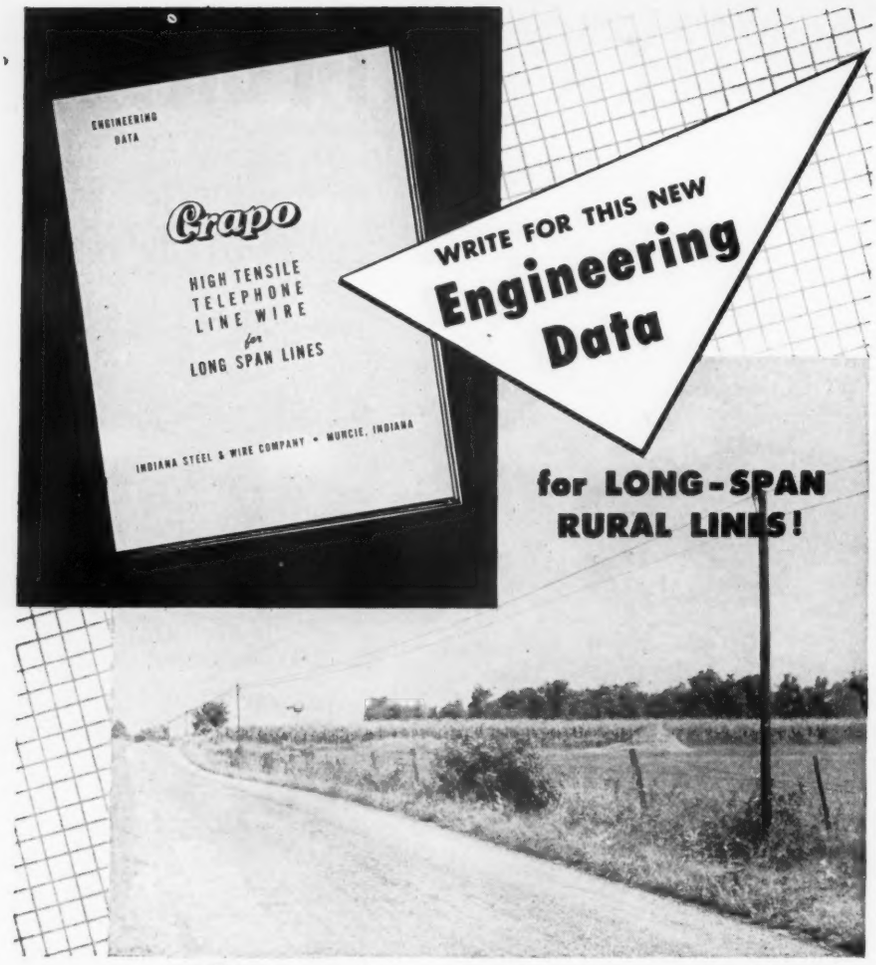
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HIGH TENSILE TELEPHONE LINE WIRE for LONG SPAN LINES
INDIANA STEEL & WIRE COMPANY • MUNCIE, INDIANA
WRITE FOR THIS NEW
Engineering Data
for LONG-SPAN RURAL LINES!

SPECIFY **Crapo** HIGH-TENSILE

TELEPHONE LINE WIRE FOR LOWER OVERALL COST

Crapo HTL-85 INDIANA STEEL & WIRE CO. MUNCIE, INDIANA U.S.A.

For Medium Long Spans

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For Extra Long Spans

● FEWER pole structures are required where *Crapo* High-Tensile Line Wire is used in building rural telephone lines. This means substantial savings in time, labor and material. There are fewer holes to dig and poles to set, less material to be handled, installed and connected — all of which contribute to lower overall construction costs.

Crapo High-Tensile Line Wire also makes for lower maintenance costs. Its superior tensile strength offers increased resistance to ice and wind loads . . . provides a greater margin of safety. Heavy galvanized coatings assure dependable, lasting protection.

For maximum savings in the construction and maintenance of rural telephone lines, specify the *Crapo* Telephone Wire which best fits your requirements.

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INDIANA

STEEL AND WIRE CO., MUNCIE, IND.

counting clerk and later traveling auditor with the Ohio Bell Telephone Co., Columbus, Ohio. After serving with Bell some years he was employed by Independent telephone companies in Ohio and Indiana, the Public Service Commission of West Virginia and as head accountant, field division, Federal Communications Commission, Washington, D. C.

In 1943-1946 he was finance officer for the U. S. Commercial Co., Rio de Janeiro, Brazil, and in 1947-1948 deputy chief, Communications Branch, Office of Military Government for Germany (U. S.), Berlin, Germany.

Ohio Commission Approves Three Security Issues

LAST MONTH the Ohio Utilities Commission approved the following security issues: (1) *The Conneaut (Ohio) Telephone Co.* granted authority to issue and sell $100,000 no par common stock, 1000 shares at not less than $100 per share; to issue and sell $100,000 of its $100.00 preferred stock, 1000 shares of not less than $100 per share; and to issue $100,000.00 principal amount of five-year notes at an interest rate not in excess of 5 per cent per annum. The proceeds from the sale of the securities shall be used to reimburse applicant's treasury for capital expenditures made therefrom;

(2) *The Lorain (Ohio) Telephone Co.* authorized to (1) issue and sell for cash 2000 shares of its 5 per cent preferred stock at $102 per share, (2) issue and sell for cash 4,994 shares of its no par common shares at $25.00 per share; (3) issue 3,026 shares of its no par common stock with a stated value of $25.00 per share, as a stock dividend on the basis of one dividend share for each 33 shares of common stock held, but no fractional shares to be issued; and (4) transfer $75,650.00 from its earned surplus account to its common stock account.

(3) *The Ashtabula (Ohio) Telephone Co.* granted authority to offer for subscription and purchase to the holders of the company's presently outstanding 50,000 shares of common capital stock pro rata 10,000 shares of its common capital stock having a par value of $25 per share, on the basis of one share of new common stock for each five shares of presently outstanding stock to be offered at a price of $28.50 per share.

CLOSE-UP OF A Grasshopper

Used by the Telephone Switchboard Manufacturers for the past fifty years, this effective fuse is now being specified by electronic and computor engineers.

Small in size, simple in construction, accurate and positive in operation in terms of current rating, operating time and ground or alarm switching.

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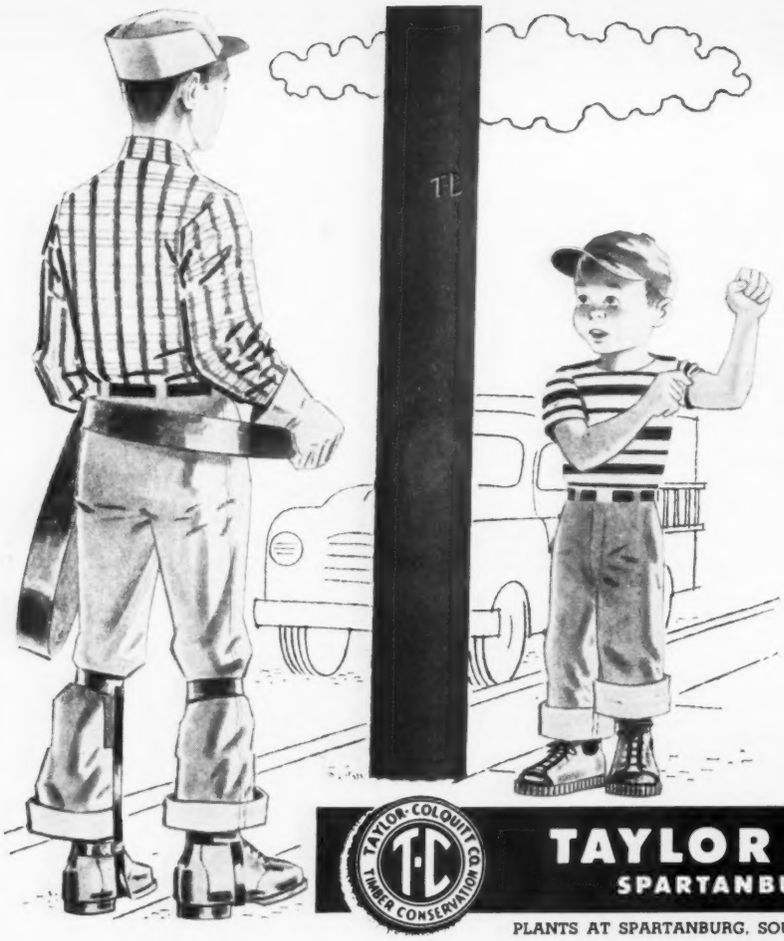

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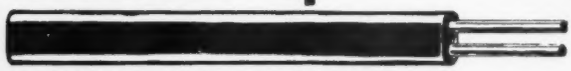

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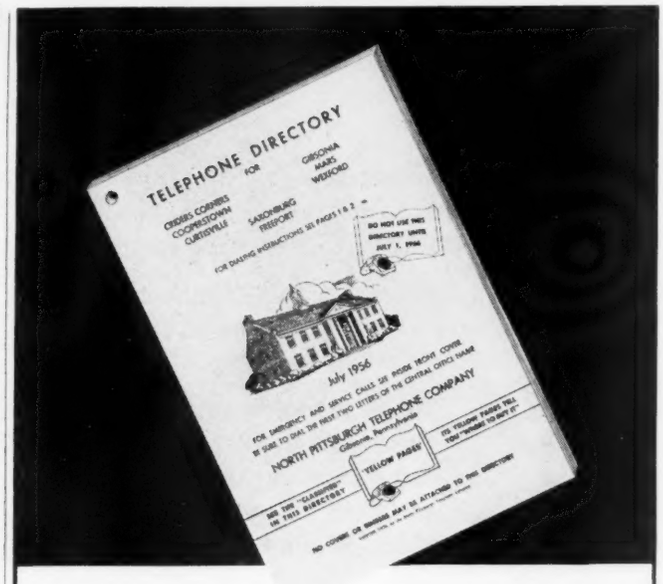

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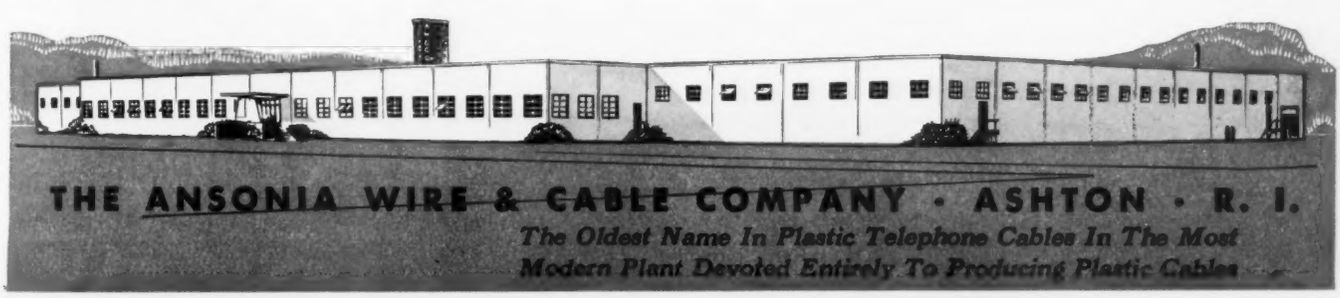

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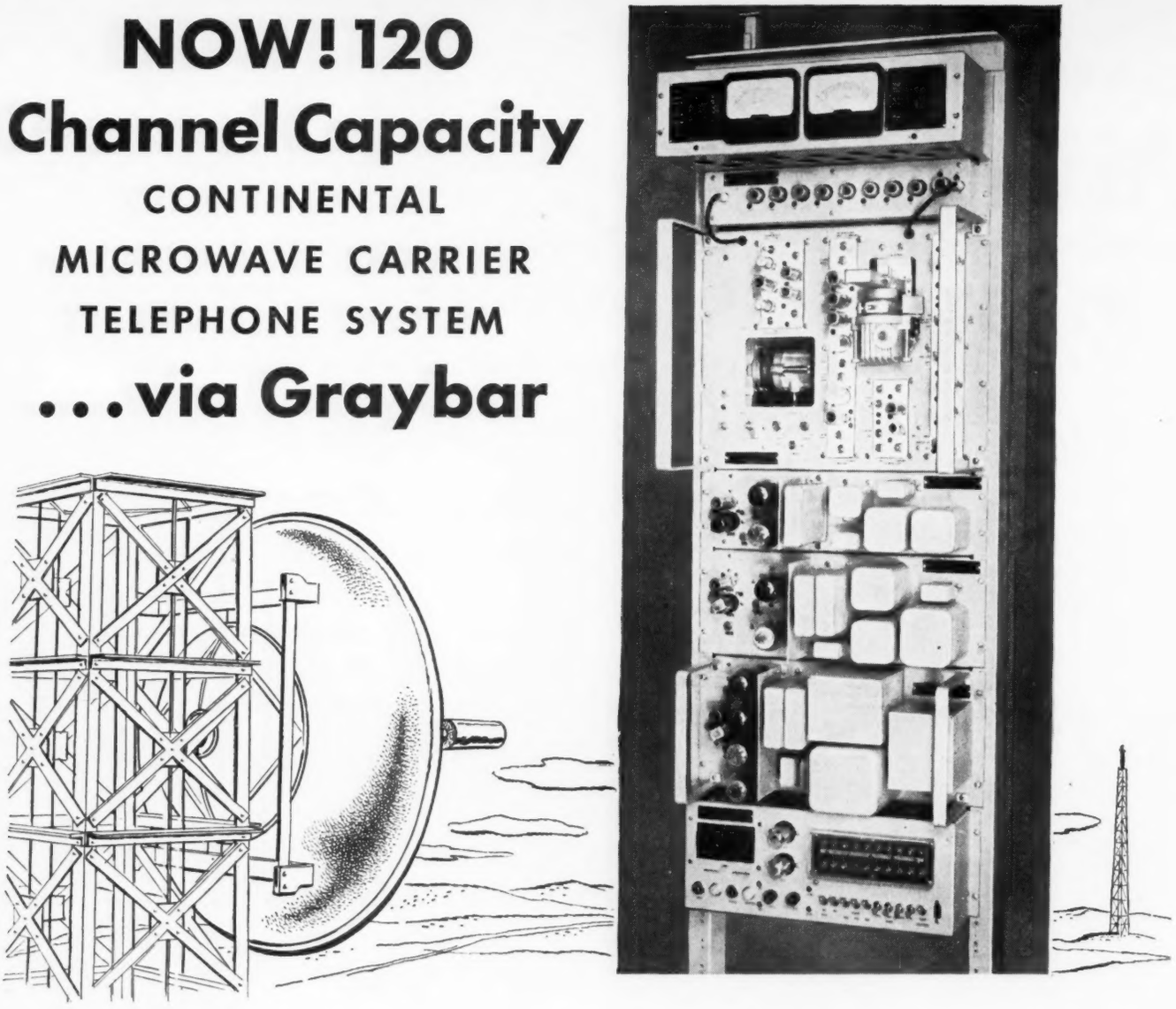

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The system is designed for use in the exclusively allocated and FCC authorized 6000 mc band for common carrier (available for telephone company use) and industrial applications.

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"Recognition Of The Facts"

IF YOU DO a lot of reading, you've probably gotten to be a sort of "*trend spotter*" by now. And we wonder whether you've noticed a trend in commission regulation that's been developing since about the time the war ended.

For want of a shorter descriptive phrase, we'll describe this trend as "a philosophy of regulation which encourages regulatory bodies to face up to the present situation and deal with it realistically."

Evidence of this philosophy at work may be found by referring to a recent statement by Commissioner Robert L. Moulton, of the Ohio Public Utilities Commission.

During a panel discussion of regulatory protection of consumers at the recent San Francisco meeting of the National Association of Railroad & Utilities Commissioners (NARUC), Commissioner Moulton said:

"*. . . . regulation must see to it that the utility consumer secures the same satisfactory service at a price which is the best obtainable that he might expect to procure if he were dealing in an open competitive market . . . . If after a critical examination of the facts it is found necessary to grant the rate application in order to ensure adequate earnings for the utility, here too the public is being protected since it (the utility) will not be able to give its consumers the service they demand and upon which they are dependent . . . . I am firmly of the belief that where rate increases are necessary they can be in a large measure justified before the bar of public opinion if the utility will take the time . . . to explain the facts to the consumer . . .*"

During the same panel discussion, veteran Virginia Corporation Commissioner H. Lesser Hooker commented, "*. . . . ours is the responsibility of developing and maintaining the broad-gauge realization that the consumer interest is best served by having the utilities healthy and strong so that they can serve tomorrow's needs, as well as today's . . . . We do a partial job, and a poor job, if we think that regulation begins and ends with hammering down the rates which a utility can charge . . . .*"

Adding weight to Commissioner Hooker's words, the Public Utilities Director of the Florida commission, P. M. Schuchart, opened his discussion on cost of capital by stating that the three criteria laid down by the United States Supreme Court in this area are — attraction of capital, maintenance of credit and financial integrity, and a return to the equity owner commensurate with that of other businesses having corresponding risks.

"*Actually, the ability to attract equity capital in the amounts needed is the important thing,*" Director Shuchart declared. "*To permit a company to maintain its credit and financial integrity, its earnings must be high enough to enable it to attract equity capital on sound terms and in sufficient amounts to provide a sound capital structure . . . . Important in the picture is the effect of inflation. Inflation has the effect of causing attrition in earnings as construction and operating expenses go up and average plant investment rises. Since we set utility rates for the future, a specific allowance in the rate of return, above the cost of capital, is needed to offset this attrition. In other words, a rate of return based on the capital alone is not appropriate for application to a net investment rate base.* Of course, *inflation might be allowed for in rate of return, and there are a number of so-called fair value jurisdictions which handle the problem in this fashion . . .*"

These quotations from the remarks of three regulatory officials indicate, we believe, an increased awareness of the fact that *the consumer interest is best served by having the telephone companies healthy and strong.*

This awareness of the facts is all to the good. It forms a base for the only philosophy for regulation that is suitable for today and tomorrow — not only the recognition of present-day economic facts but also realistic action that takes these facts into complete consideration.

For, as we've said before, it is only by the recognition of the facts, and the implementation of the things that are necessary to meet them, that the public can be supplied with the quality and quantity of service it demands.

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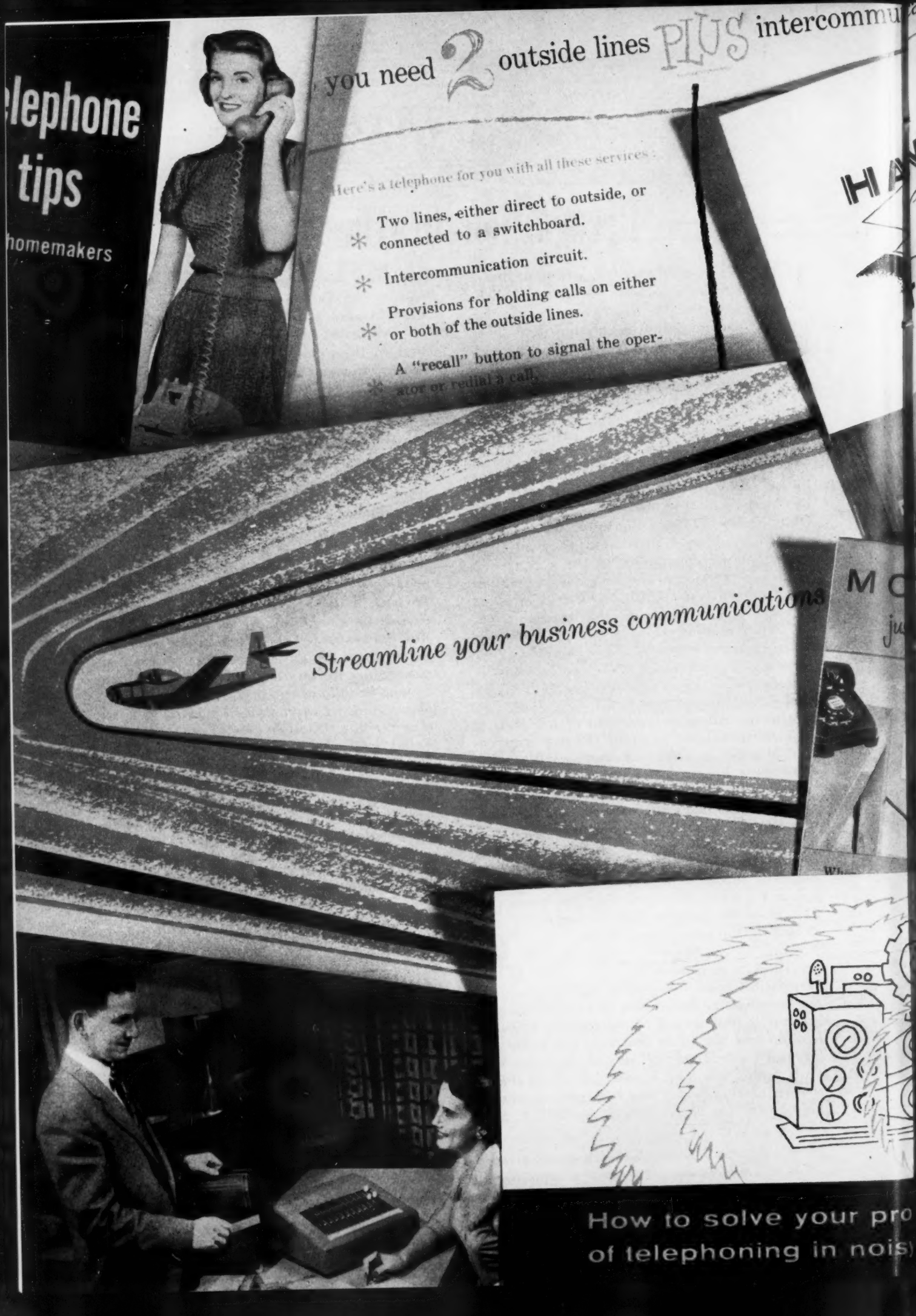
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T-152	Solid Color Phones 6 pgs.—3¼" x 6"	✓	✓	✓	✓	✓	✓	✓	✓	✓
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T-156	Koiled Kords 1 pg.—3¼" x 5¾"	✓	✓	✓	✓	✓	✓	✓	✓	✓
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T-158	GAI-PHONES 1 pg.—8½" x 11"		✓ (Fold)		✓			✓		✓
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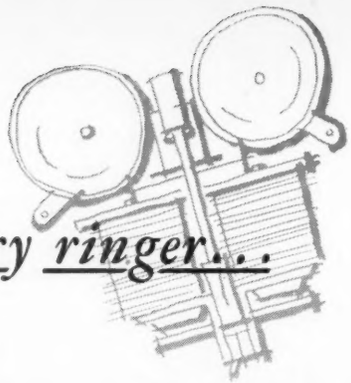
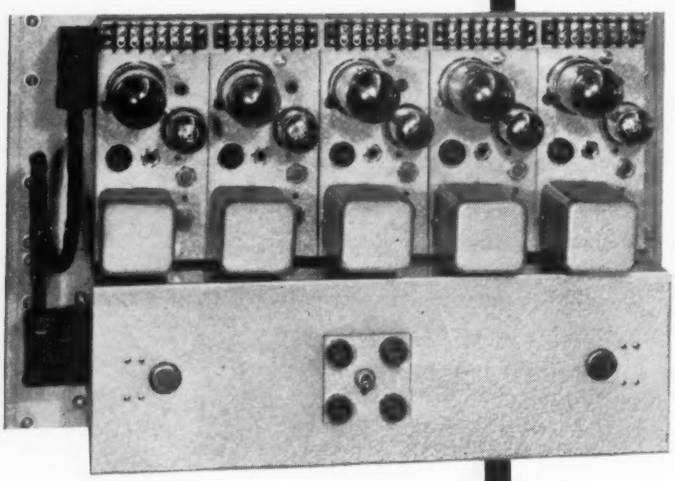


Behind every ringer...

there must be a dependable ringing supply



Here's what users have to say about the "dependability" of the KELLOGG *Electronic Ringing Generator*

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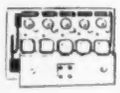

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A New Era

In Communications

By B. C. BURDEN*

"WE ARE fast approaching the time when we may pass from the direct current and relay phase into a new period in which electronics will play a major role . . . . Apparently we are on the verge of 'a new era in communications'."

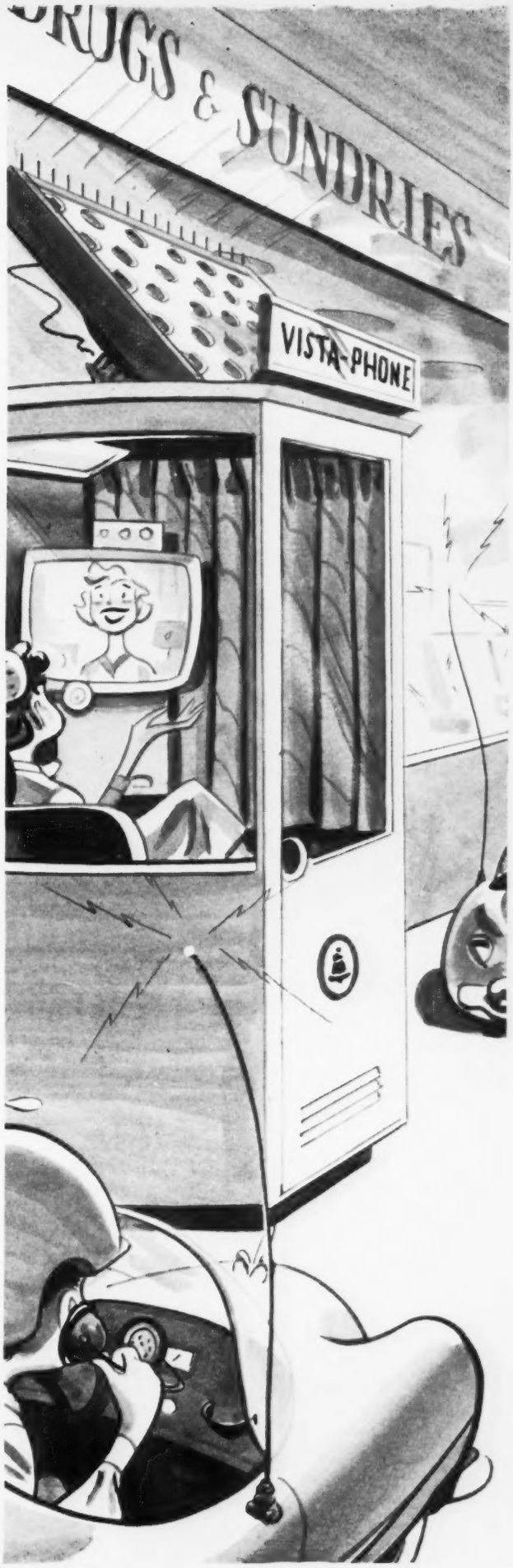
IN CONSIDERING which of the many new developments would be worthy of discussion before such well informed telephone men as yourselves, your Subcommittee was impressed by the fact we are apparently on the verge of what may properly be termed *"a new era of communication."*

In the past we have become accustomed to a steady and constant improvement in the equipment which goes into telephone plant. On the whole, these improvements have not materially changed the general character or basic concept of the components or complete systems with which we work. Direct current and electro-magnetic relays have been and still are the backbone of our telephone exchanges.

But it would now appear we are fast approaching the time when we may pass from the direct current and relay phase into a new period in which electronics will play the major role. The tremendous impetus given technical research by World War II plus the remarkable recent developments and improvements in the silicon crystal family have combined to give us some remarkable new tools which will undoubtedly change our whole equipment picture.

The far reaching impact on the future of our industry by one single development, the transistor, was aptly expressed in a recent speech by Dr. M. J. Kelly of Bell Telephone Laboratories. Speaking of this minute bit of solid state material, he said:

"This device is one of those big 'break-throughs' in science, which occur only at rare intervals. Just as the



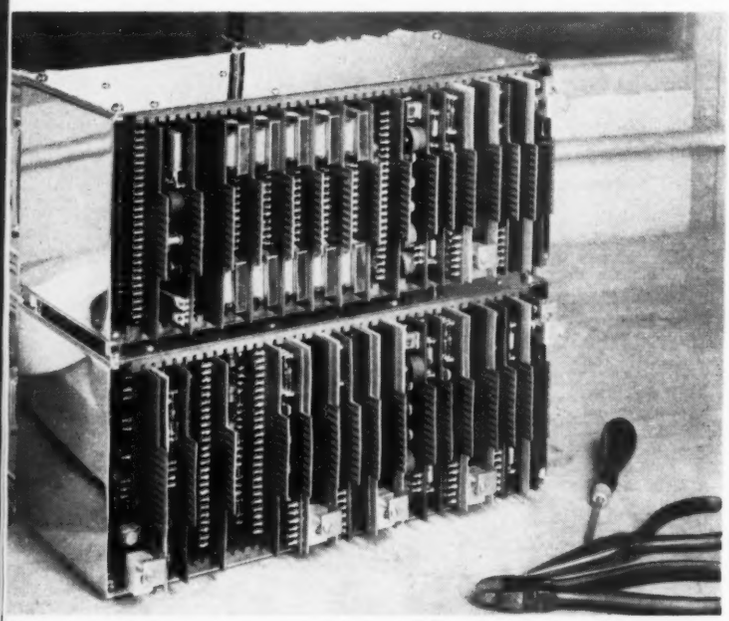
* *Mr. Burden, consulting engineer, Lincoln, Neb., presented this paper October 15 at the USITA Plant Conference, Conrad Hilton Hotel, Chicago.*

vacuum tube and relay symbolize the past era, so will the transistor symbolize the era now beginning to unfold. The transistor and its minute relatives will almost certainly stimulate as great or greater changes in commerce and industry than reaction motors, synthetic fibers, or even perhaps atomic energy. In the transistor and the new solid-state electronics, man may hope to find a brain to match atomic energy's muscle."

The actual and potential effect on our business of current electronic developments and new circuitry techniques can best be appreciated by considering some of the basic building blocks in this electronic future which lies ahead.

Potential Applications Of Transistors And Crystal Diodes In The Telephone Field

THE greatest single factor that may radically change our entire equipment picture is the *transistor* and its twin brother the crystal diode. The transistor is barely eight years old today, but it is no longer a novelty and is now being used in everything from concealed hearing aids built into a pair of horn rimmed



AUTOMATIC ELECTRIC'S experimental electronic switching system using transistors was exhibited at recent USITA convention.

eye glasses to the giant electronic computors which execute in a split second computations which would take many men many hours. The transistor has even attracted the interest of the press — feature stories appear in such magazines as *Fortune, Business Week* and other publications on this tiny new comer to our business.

The transistor and other members of the silicon family are bringing a new and reduced dimension to all types of equipment. Let us examine its various potentialities in our business.

(1) — *Electronic switchboards which transistors and diodes make possible* will, in time at least supplement if not replace present types of boards.

(2) — *Transistors should enable subscribers' sets to be made smaller* in size yet more efficient in transmission. The carbon type transmitter may in time give away to the dynamic type with a tiny transistor making up for the low level output of these more stable transmitters. The electro-magnetic ringer may eventually be replaced by a transistorized "beeper."

(3) — *Heavy multi-wire rural leads will give way to simple two-wire lines* with pole mounted transistorized subscribers carrier channels supplying the needed circuits in place of a multiplicity of metallic wire lines.

(4) — *The picture telephone, whereby we will see as well as hear and talk,* will become a reality. Picture phones are already being tried out on an experimental basis. A promising development in connection with this innovation is a new technique, whereby a picture with adequate detail can be transmitted over the ordinary long distance voice circuit. The frequency band required for picture transmission is reduced to 3000 cycles or less by cutting down the picture detail and sending a picture every two seconds instead of continuously as in television. Here again the transistor would be the tool which would keep the "picture telephone" to reasonable dimensions.

(5) — *Transistors are a natural for test equipment,* particularly the type carried into the field. 1000-cycle transmission oscillators, cable fault tone sets, exploring coil amplifiers can all take full advantage of the size-weight design advantage which the transistor makes possible.

The applications just mentioned are but a part of the uses to which this one simple development will be put in the years immediately ahead. It is easy to see why the head of Bell Laboratories regards the transistor as a "break-through" into a new era.

Every plant man should recognize that transistors, diodes, and silicon rectifiers will in the future be just as common as relays are now, and he should start immediately in becoming familiar with the operating characteristics of these marvelous new electronic tools.

Miniaturization Trends

SINCE WORLD WAR II we have seen a trend toward putting more and more in less space. Solid state transistors and diodes gave us a big push in the direction of more elaborate equipment in small space. The *printed circuit* plus development of new baby size components such as resistors, capacitors and transformers are giving us a further shove in this direction. This trend more and more in less and less is referred to as *miniaturization.*

The earth Satellite project, the need for adding additional protective electronic gear in Commercial Air Liners and other similar projects will be a further stimulus toward putting electronic units in a fraction of the space they now occupy.

I recently attended a Radio Parts Show here in Chicago. I saw some amazing examples of molded terminating equipment in which 24 contacts occupied a space no larger than six contacts would in present day telephone equipment.

This miniaturization trend is one which many engineers are already taking into account in planning future central office additions. It is reasonable to conclude that telephone equipment design will follow the miniaturization trend in the electronic field. Carried to its maximum, it might well mean that a future 10,000

line office need be only one-half the size of present offices.

Consider for example — what a reduction of say 50% in the space occupied by main frame terminations would mean in a large central office. A reduction in central office size made possible by miniaturization would offer savings not only in initial building costs but in lighting, air conditioning and general maintenance expense. However, on the other side of the coin, we must recognize that while components are getting smaller we are adding more and more features, hence, there may be an offsetting trend which will absorb our saving and possibly result in offices as large or larger than those now required.

The Solar Battery

MAN HAS LONG BEEN ATTRACTED by the possibility of extracting useable amounts of energy from the sun. For a variety of reasons a practical solution to this problem has not been forthcoming, but a step in this direction was last year's announcement of the Solar Battery. Although this new power source produces relatively minute amounts of power as most of you know, it is already being tried out in the form of pole mounted transistorized solar-powered subscriber carrier systems.

It is within the realm of reasonable conjecture that the Solar battery could be so improved and so refined that in the years ahead it conceivably could power an entire central office, particularly if the power demands were reduced to a fraction of their present level by use of electronic switching. However, I feel the possible real field for the future Solar battery will be in supplying energy to pole mounted equipment such as repeaters, carriers, etc. and not in supplying central office energy.

Free Power

NEW AND REMARKABLE DEVELOPMENTS in the electronic field now occur so frequently and with such regularity we now take them in our stride and without surprise. In spite of our sophisticated attitude toward new developments, I was startled to learn from the August issue of a leading electronic magazine that radio sets have been built which operate on *free power*.

Free power refers to a new development whereby transistorized radio sets (both receivers and transmitters) are powered by energy obtained "free" without benefit of Solar cells, batteries, or other well known methods of producing power.

Several methods are available whereby electrical energy sufficient to energize low power requirement devices can be obtained. These are:

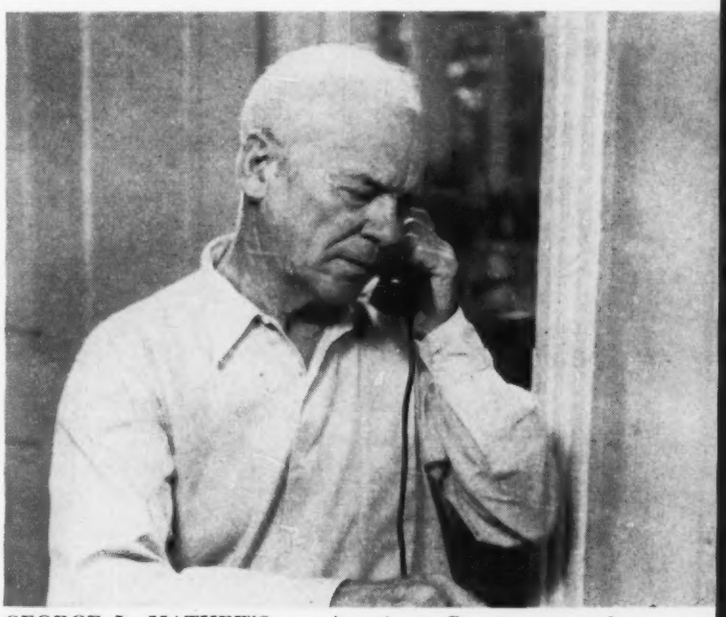
(1) — *Utilization of the energy available in sound waves.* This is accomplished in a miniature radio transmitter by simply connecting the electrical output of a sound powered microphone into a miniature power pack where the alternating current voice waves are rectified by crystal diodes into direct current and used to charge a capacitor. The alternating current voltage built up across the capacitor is at the same time modulated by the voice waves and applied to a transistor oscillator output unit. The power output of the arrangement is, of course, very low but sufficient to transmit an RF signal over a distance of several hundred yards.

(2) — *The second method of obtaining free power for operation of low energy transistorized equipment* consists in rectifying an incoming RF signal from nearby radio station then using the rectified power to energize a small radio set turned to any station. This could conceivably raise a delicate question of ethics for example the propriety of using free power from an NBC station to receive a program from CBS affiliate.

Operation Of Pole Mounted Equipment From Induced Power Voltage

YOU MAY WELL ASK, "*what does free power and radio sets have to do with the telephone business?*" Well the connection is somewhat nebulous, but nevertheless pertinent and I hope interesting.

Pole mounted transistorized rural subscribers' carrier systems are now undergoing field trial. One of the problems is that of providing energy for the carrier unit. Solar cells used in conjunction with small storage batteries are one solution and are being tried out. However, it occurred to me that if free power can be taken



GEORGE L. MATHEWS, an Americus, Ga., cotton and peanut farmer, made the first sun-powered telephone call. He remarked that it sounded "just fine." The Bell Solar Battery is an invention of Bell Telephone Laboratories.

out of the air from a broadcasting station then we in the telephone business could, if we saw fit, utilize the free 60-cycle power available on practically every rural telephone line in the country. I refer to the induced power voltage due to electro-static and electro-magnetic coupling between telephone and paralleling rural power lines.

I have not been "hitting the weed" when I suggest that there are very few of our rural lines which do not have sufficient induced AC power available to power a transistorized subscriber's carrier unit or a voice repeater.

The fact that substantial voltages are induced on virtually every rural telephone line is well known. I have personally checked dozens of rural telephone lines and have found the average farm line involved in an average rural power line parallel situation will show induced

voltages ranging from 10 to as high as 100 volts (when measured with a high impedance voltmeter).

I have seen numerous cases where neon type isolating, one and two watt bulbs used in grounded ringers in subscriber's sets (to isolate the line from ground) would remain ionized after a ringing pulse. The amount of power required to ionize a neon bulb while small would be more than adequate to power a piece of transistorized equipment. The fact that neon bulbs can be operated off voltages standing to ground on a telephone line proves the adequacy of this free power.

This induced voltage on our rural lines is, of course, kept from causing excessive interference by being balanced to ground on the two sides of a line. If it were used to power a pole mounted rural subscriber carrier system, it could be drained off in a balanced simplex type leg thence through a diode rectifier, a dropping resister and on to ground. I am not seriously suggesting we may in the near future be utilizing this unwanted free power present on our lines but as Herb Schriner says, "its possible."

Effect Of Electronic Computors On Our Industry

THE NEW and amazing electronic computators which enable man to do in seconds what formerly would have taken months have a definite place in our future. These remarkable electronic brains are already being used by our accounting and statistical people. But of equal or even greater importance, they are creating a new demand for private wire circuits between cities. The current trend toward decentralization of large manufacturing companies and the scattering of small factory units over a wide geographical area is resulting in the parent company buying a single expensive and elaborate computor which is then made available to the outlying plants and subsidiaries via private wire service furnished by telephone companies.

Typical of the close tie-in between the telephone business and the marvelous new electronic computors is the recent announcement of the IBM's "*data transceiver.*" This device is designed for direct connection to telephone lines for the purpose of sending or receiving information from punched cards which on arrival at the main headquarters is fed directly into a computator for solution or processing.

Thus, an expensive computator can be made available to companies in any section of the country via ordinary long-distance lines by means of this new *transceiver.*

The extreme speed and versatility of the electronic computators is shown by a new IBM computator that in 22 seconds can solve 30 simultaneous equations involving 54,000 multiplications and the same number of additions. This same job would require a trained engineer with a desk calculator, working at top speed 24 hours per day, over 13 days. The magnetic-tape memory unit of this machine can store for later use or consideration almost 4,000,000 two-digit numbers or words.

Over The Horizon Radio Transmission

RADIO CHANNELS are being used more and more for point to point toll circuits in both Bell and Independent plants. It was only a few years ago that the use of radio in our toll plant was for unusual links between points difficult to serve with wire lines. The current availability of reliable microwave radio link equipment at reasonable cost now justifies application studies when existing wire lines require reinforcement or new circuits must be established between points not now served.

A new technique in the use of what are normally considered line-of-sight radio channels has been developed and is known as "over-the-horizon" transmission. It is also sometimes referred to as "scatter transmission." Essentially the new method involves the use of very large parabolic dish type antenna plus exceptionally high transmitter power. The transmitted waves take off at many different angles of radiation resulting in some of the signal being reflected back to earth at a substantial distance beyond the horizon.

Extensive tests have proven this type of radio link sufficiently reliable to warrant its use for some situations where a long single hop is desirable and the higher expense of the terminal equipment justified.

For example, the Bell System has recently installed a link of this type between Florida City and Havana, Cuba, a distance of well over 100 miles.

Telephone Shorthand

AS YOU WELL KNOW, a frequency spread of roughly 2700 cycles is used for the satisfactory transmission of telephone conversation. If the channel width for one conversation could be cut to save 500 cycles this would mean that many more circuits or channels would be available over existing facilities.

Laboratory experiments have been underway for some time in an effort to cut channel width without affecting the intelligibility of the transmitted signal. One promising approach being pursued by the Bell System is a sort of telephone shorthand. They propose to "snip" off a sample of each recurring speech sound which is then transmitted to the distant office where it is reconstructed in its original form. Initial experiments indicate that a one in six sampling is adequate to convey intelligible speech.

Thus, if and when, the new system is available, we may be able to get from three to four channels from every existing voice channel.

Electronic Switching Systems

FOR THE PAST TEN YEARS, we have been hearing predictions of wonderful new electronic switchboards. As conventioner's found out when they visited the exhibits — they are now an accomplished fact.

These early models are but the forerunners of a vast new concept based on an involved mathematical theory which states that all forms of information can be expressed or measured quantitatively and translated into electrical terms of "pulse" or "no pulse." Thus written words or even the information contained in the sound of the human voice can be translated into a series of pulses.

These pulses flowing into transistors and diodes, which bar or open passage through, and into capacitors (or other media) which by charging or not charging, serve to switch, memorize and accomplish with lightning rapidity, the same functions accomplished by the slower electro-magnetic relay switching systems.

One prominent equipment engineer predicts that the

electronic switchboard of the future will be 75 per cent smaller than existing boards. He further predicts that the nature of the new electronic components is such that many new services not possible with electro-mechanical systems will be a "push-over" for these boards of the future with their electronic logic and memory features. How long before these boards of the future with their electronic logic and memory features will be available is anyone's guess. Some predict two years, others five, many say, "there will always be a relay," but one thing is certain, electronic boards will definitely be a part of our future.

Memory Storage Units

THOSE OF US that have spent the last 30 or 40 years in the telephone business have long since become familiar with the electro-magnetic relay and the heated cathode vacuum tube. The transition in our thinking to the solid state devices such as the transistor and silicon diode has not been too difficult but now we are confronted by a variable host of new terms, concepts and equipment units.

If we are to keep abreast of the march of new electronic developments which are bound to affect the whole future equipment picture, we must become familiar with the various pieces which make up this gigantic electronic jig saw puzzle which is now beginning to take shape.

In reviewing dozens of technical publications in an effort to select and boil down for this paper those developments which may and surely will affect our future, I noted many references to *Memory Storage* devices. Because these devices will play a part in future electronic telephone switching systems, I felt they were worthy of mention here.

As the name suggests, these memory devices are simply an electronic means of storing pulses. The exact form may vary from tiny magnetic cores arranged in a rectangular cross bar which are magnetized or demagnetized by current passing through them, to a cross hatched arrangement of crystals which can retain (until erased) information in the form of pulses which are impressed on them.

We will see more of these unusual units which resemble and function in some respects like a crossbar switch.

The Years Ahead

THE TREMENDOUS impact of electronics on our future, both as telephone people and individuals, is almost beyond our comprehension. Dr. Baker in a recent address predicted that within 10 years a major share of the electronics business will come from distinctly new and revolutionary products which are now not even in the drawing board stage.

Undoubtedly in this vast anticipated flood of new electronic equipment and techniques will be many which will apply to the telephone business. Communication will in the years ahead become truly universal. Long distance, which to many prior to World War II was considered a sort of emergency or luxury service, is now used almost as freely by many business men as is local service.

Improved and lower priced mobile selective signalling radio equipment is inevitable and will result in more extensive use of this final link in our communication chain. Equipment elements in future switchboards will function in millionths of a second instead of thousandths of a second as is now true of mechanical systems.

The picture telephone is being tried out on an experimental basis. The transistor will be the tool that will keep the picture telephone to reasonable dimensions.

Personal paging — the system whereby individuals can be called to a telephone by virtue of a tiny radio receiver no larger than a package of cigarettes which they carry in their coat pockets is now available.

The use of standard telephone lines to transmit business and engineering data between cities at equivalent word and pulse speeds much higher than present teletypewriter service is already approaching a practical form.

Hollow tube wave guide transmission may obsolete present coaxial cable and wire as a single pair of simple tubular wave guides could carry thousands of voice or equivalent voice circuits between major cities.

The great scientific era now beginning to unfold should be a challenge to all Independent telephone plant men. We must become thoroughly familiar with the new tools and techniques which will soon be commonplace in our industry. A knowledge of ohms law and the ability to find one's way around a direct current diagram will no longer suffice.

In the not too distant future, we will be dealing with electronic circuits which will require a sound engineering knowledge of advanced alternating current theory and of the operating characteristics of many new components and of circuitry far different in concept and execution than the circuits we know today. We must embark on a program of self-education so we will be ready for these new developments as they emerge from the laboratory . . . .

In thousands of laboratories, both small and large, throughout the land eager engineers and physicists are working day and night on electronic research projects whose end results could be of such significance as to change even our way of life.

So, until we meet again, let me suggest, "Keep a sharp eye on electronics; It's in your future."

Toll Compensation Problems

— And A Look Ahead

By W. R. JARMON*

IT WAS indeed gratifying to report last spring, on behalf of the Toll Compensation and Settlements Committee, that negotiations with representatives of the Bell System will result in an increase of approximately $11 million a year in compensation to the Independent companies, when fully adopted. This figure is based upon estimated 1956 traffic volumes, and relates to interchanged message toll telephone business.

Completion of studies for the many exchanges selected at random was effected by united effort on the part of the entire telephone industry, and provision of the information armed the Committee with facts and figures which were indispensable in finalizing the negotiations. Not only should appreciation be expressed to the industry as a whole for its support and cooperation, but special thanks should be extended to the subcommittees and individual companies which carried the full burden of responsibility for conduct of the studies.

I am also particularly gratified to observe that an increasing number of companies are making their own toll studies. This is certainly a move in the right direction inasmuch as the average settlement schedules are not designed to meet every specific situation. They can, however, effectively serve as a means of settlement for companies not prepared to negotiate on an individual study basis. In those cases where there is indication that these average schedules do not adequately cover the costs of the Independent company in handling the interchanged business, it would definitely appear in the best interest of the company to institute its own study. Now that the new schedules have been established, individual companies are placed in a much better bargaining position to negotiate their own settlement contracts.

Growing Pains

MOST problems being experienced by the telephone industry seem to be associated with "growing pains," and inflation. Growing pains, although sometimes distressing, are a welcome sign of approaching maturity and stature. Inflation appears to be an accompanying manifestation of the times in which we find ourselves as this nation takes a more and more dominant role in world affairs.

Everyone in the telephone industry should be gratified that there has been a constantly expanding market for more and better telephone service. Despite extraordinary efforts in some areas to keep up with demands of the American public, held applications for service have remained generally at a high level since the end of World War II.

We are well aware of the fact that the number of telephones in the United States has more than tripled since the Toll Compensation Committee was formed in 1936, and we must keep in mind that each of these additional telephones in service is a potential point for origination and termination of toll messages.

In this connection, the number of long distance messages has increased even more rapidly. During the same period the Independents' share of annual revenue from interchanged toll business has climbed from $12 million to about $153 million. This gives some idea of what is in store for us. Such additional business is, of course, most welcome, and it is exciting to contemplate the future when we hear that most economists foresee no immediate diminuation in past business acceleration.

**Mr. Jarmon, chairman of the USITA Toll Compensation & Settlement Committee and president of the General Telephone Co. of the Northwest, presented this paper at the 1956 USITA Convention.*

Population is perhaps the most important factor in measuring future growth. Conservative estimates place our population at 190 million by 1965 and 200 million by 1975. The effect this population growth will have on our industry is obvious. Not only is the population growing in total, but it is constantly shifting away from the larger industrial and trading centers.

Much of this diffusion is into the two thirds of the geographical area of the United States which is served by Independent telephone companies. It has also had a tendency to increase the size of the area throughout which our subscribers have economic, social and political interests. In fact, telephone service has become the "nerve system" of our nation, and has contributed substantially to the "shrinking" of state, regional and national boundaries in this era of rapid communications and transportation.

The need for long distance service is ever increasing, and the industry is constantly providing improvements in service which make it easier and more convenient for customers to utilize its facilities. We are on the threshold of the transistor age which promises unlimited horizons through electronic switching and other improvements in handling telephone traffic.

We are mechanizing, we are providing better and better local and long distance services, and we are designing our equipment with an eye to sales appeal. Not only can people be connected to more telephones today, but they are constantly finding it easier and more pleasant to take advantage of this opportunity.

All of these services must be sold. Merchandising is one of the most important tools currently utilized by progressive telephone management. Multiple telephone installations, higher grades of local service, long distance service, PBX services, automatic answering and recording devices, private lines, colored sets, and many supplemental equipment items are available for sale. A terrific revenue potential exists in the sale of these items, and, naturally, all additional sales tend to increase toll business. Long distance service is no longer merely a promotional item. It has become a substantial part of the over-all business of every telephone company.

W. R. JARMON,
Chairman, Toll Settlements & Compensation Committee.

Much has been said about inflation during recent years, and it appears that inflation will be with us at least for some time to come. Inflation in the past has brought with it high-cost plant and increased operating expenses. It now appears that we are in the throes of another round of substantial upward price adjustments.

Also apparently in the offing are further revisions in the minmum wage laws, possible elimination of the 750 station exemption, continued high-cost money and no letup in taxes. True, this general situation faces all businesses, but most businesses are not subject to the same attrition in earnings as experienced in our industry, and we cannot afford to let it adversely affect our operations. In this connection I should mention we are long overdue in finding an effective way of solving the "settlement lag" problem.

Service Standards

THE STANDARDS of service for the telephone industry must meet the needs of our customers. This takes not only aggressive management and planning, but also money and more money. It seems imperative that toll compensation keep abreast of rising costs and changes in operating conditions.

The need for upward adjustments in toll compensation applies equally to settlement arrangements for private line services, extended area service, foreign exchange service, TWX service and mobile radio services. Independent companies should make sure that they are receiving just payment for services rendered.

While negotiations such as those recently completed were conducted on an industry-wide basis, individual companies should take every reasonable step to insure that the new schedules result in fair compensation for their own participation in the interchanged business. One of the best ways to insure this objective is to be fortified with facts and figures arrived at as a result of individual company studies. Good records are important to any such study. These studies are hard work and time consuming, but I know that in most instances they have paid off in increased dollars — and dollars maintain good plant, pay wages, and give a return on money invested in our business.

Many of the companies have reviewed the new schedules and have stated they are quite satisfactory. Other companies have indicated just the opposite. I am firmly convinced that continued attention to toll settlements by every Independent company will be well worthwhile.

The Washington office of the USITA is prepared to give helpful advice to individual companies concerning their compensation problems, and the Committee will continue to pursue this matter diligently on a national basis. A qualified full-time toll engineer has been retained by the Association to assist in the review of settlement arrangements and practices and in the conduct of toll compensation studies. His services should be of real value to all of us by providing the procedures and background so necessary in accomplishment of our objectives.

In order to remain healthy, our industry must keep settlement arrangements abreast of the times. Independents should not be expected to subsidize interchanged business with their own exchange service revenues. We should obtain every dollar to which we are entitled from our interchanged traffic. The Independents should be *particularly independent* in this field, and since it has been made eminently clear that we must prove our needs, let us do so. The future of our dynamic, rapidly growing industry looks bright under free enterprise. Never were the opportunities greater for alert and aggressive telephone management. Settlements are one of our primary responsibilities, and it is essential that our industry be united and ever vigilant in this most important program.—*This paper was presented at the* 1956 *USITA Convention.*

By JOHN S. REED

Modern Cable Construction

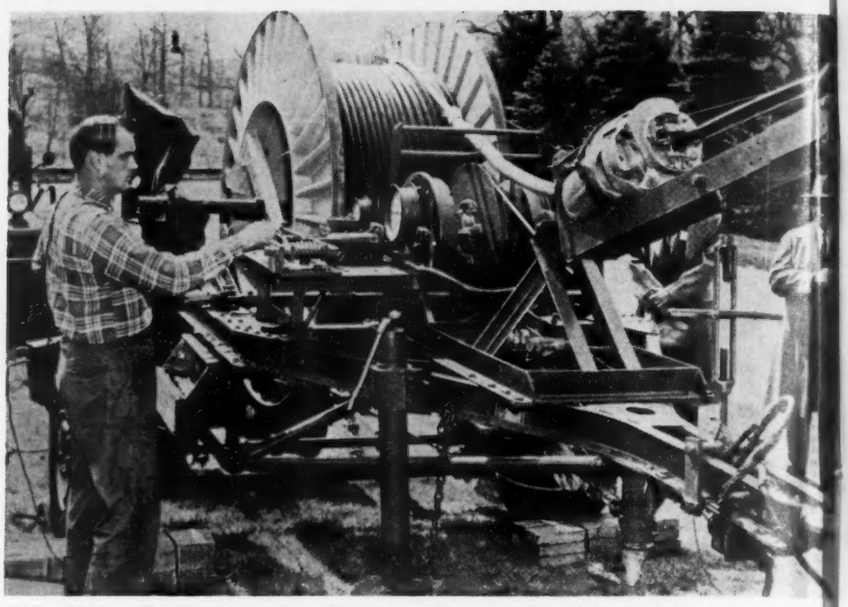


FIG. 217:—General Machine Products Corp. "E" cable lasher in operation, prelashing cable.

SECTION VIII-E of Mr. Reed's article discusses — (a) preloading of telephone cable; (b) cable and messenger tensioning arrangement on prelasher; (c) use of cable blocks on poles; (d) operation of prelashing equipment and (e) transferring messenger with cable to permanent supports.

THE PRELASHING of telephone cable is a novel adaption of the standard field spinning procedures described in previous sections. Instead of the lasher traveling along the cable and messenger, and binding them together with a spiral wire wrap, the machine is fixed in position on a combination cable reel and strand reel trailer and spins wire around the cable and strand as they are pulled together into position on the poles.

The arrangement illustrated in *Figures* 217 and 218 is designed for prelashing cable up to 1⅝ inch in diameter to 5/16- to 7/16-inch diameter strand, using .045 inch stainless steel lashing wire. *Figure* 219 identifies the various parts of the machine.

The prelashing equipment is particularly well suited to lashing long runs of cable and has been successfully employed in placing cable in difficult right of way situations such as on long bridges with heavy traffic, along property lines where fences, garages, or other obstructions are present, and through thick hedge rows. This equipment makes it possible to do most of the work on the ground, thus reducing the number of times the workmen would have to climb poles. The claimed result is a faster, safer, and more economical installation of cable and supporting strand with less damage to poles due to the less frequent climbing involved.

It is stated that a five-man crew operating the prelashing equipment can place up to 3,000 feet of cable in one continuous operation, depending on the length of winch line available and the amount of cable on the reel. It is claimed that approximately 10 miles of cable can be placed in this manner in one day. This work is facilitated by providing portable radiophone units so that the man stationed at the lashing trailer can keep in contact with the lineman following and controlling the cable and strand as it passes over cable blocks on the poles along the way, as well as with the winch operator in

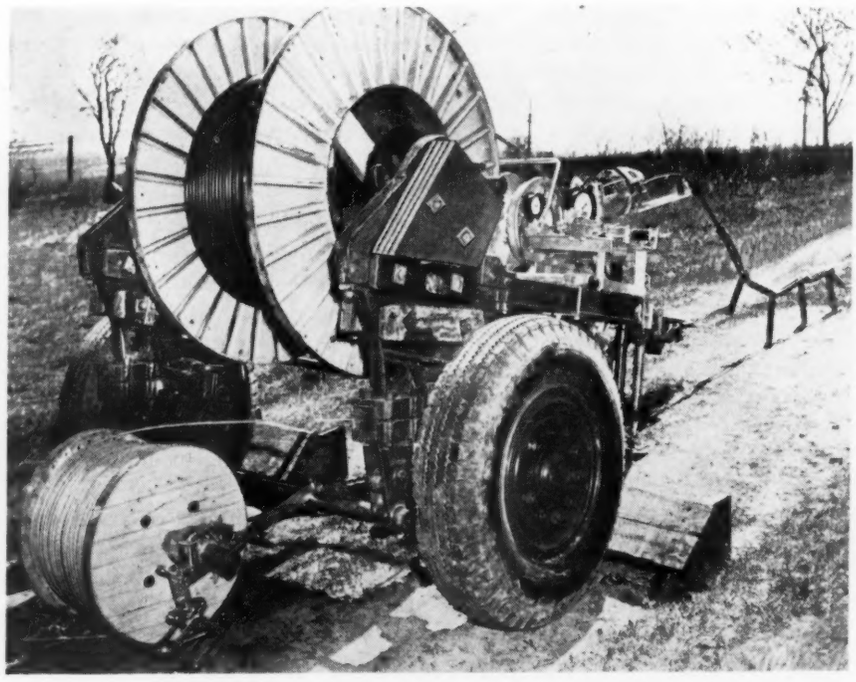


FIG. 218:—Rear view of cable prelashing machine showing strand reel back of and under the cable reel.

the truck at the far end of the lead. New transistorized type radiophone units such as illustrated in *Figure* 220 are available for this type of communication.

Cable and Messenger Tensioning Arrangement on Prelasher

THE SUCCESSFUL operation of the prelashing equipment depends on the ability of the machine to properly tension the cable and strand as they pass through the lasher. Insufficient tension of the cable would result in bows or waves in the cable. If the strand is not sufficiently taut in the prelashing procedure, excessive sagging would result. Furthermore, there must be some means of compensating for surges in the traveling cable and messenger, which could produce variations in the strand tension.

The cable tension is controlled by a cable reel brake Unit *I* (*Figure* 219) and the strand tension equipment N applies tension to the messenger strand. The mechanical brakes on the cable and strand reels are set principally to prevent over-running of the reels, though they may be adjusted during the operation to provide additional tension if required.

Figure 221 illustrates the tensioning equipment in detail. The messenger strand passes through pretensioning rollers which are adjusted to apply sufficient tension to the strand so the latter will not slip on the hydraulic brake pulley. Additional tension on the strand results from the braking of the pulley when the hydraulic pump is operated as shown in *Figure* 217. The braking force is indicated by a hydraulic pressure gauge.

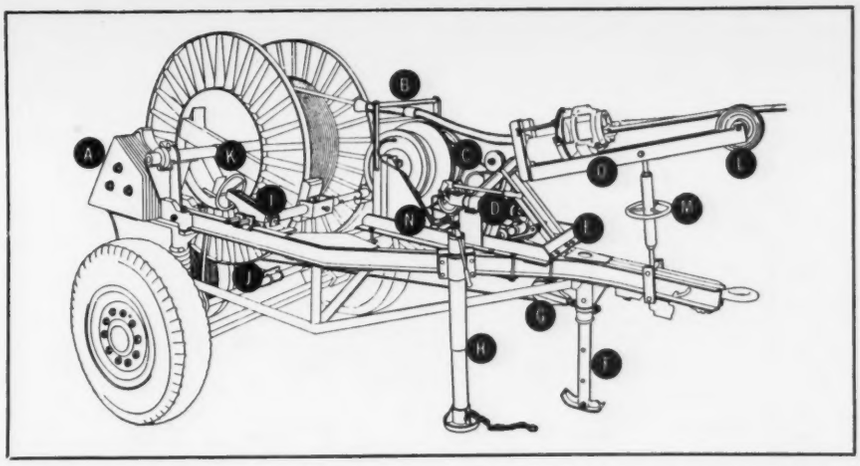


FIG. 219:—Details of cable lashing machine. A — "B" counterbalance assembly. B — Cable guide and frames. C — Brake and pulley assembly. D — Hydraulic brake controls. E — Main frame. F — Foot post. G — Snatch block. H — Hydraulic jack. I — Cable reel brake. J — Strand reel mounting and brake assembly. K — Positioning collars. L — Nose sheave. M — Turnbuckle. N — Strand tensioner. O — Mounting for "C" cable lasher.

The mesenger strand passes from the brake pulley to a hydraulic compensator which is a kind of feedback system that senses the need for more or less tension in the strand to compensate for variations due to surging. As the strand bears against the compensator pulley, it causes the pulley to rise or fall in proportion to the tension in the strand. Springs in the compensator resist the pulling force of the strand and an indicator registers this force as the overall tension of the strand.

Only enough tension is applied to the cable to prevent slacking that would create unsightly bows in the cable. On the other hand, the strand requires considerably more tension, generally around three-quarters of the total tension of the messenger in the installed position with cable on it as determined from strand tension tables. In cold weather, this tension is made proportionally less.

In pulling the cable and messenger through the prelasher and cable blocks on the poles, the traveling speed of the winch line is kept at about 125 feet per minute, more or less as required to reduce surging to a minimum. As the cable and strand approaches the end of the pulling section, the winch speed is reduced, and at the same time, the strand tension is gradually increased to slightly over the final installed tension of the messenger.

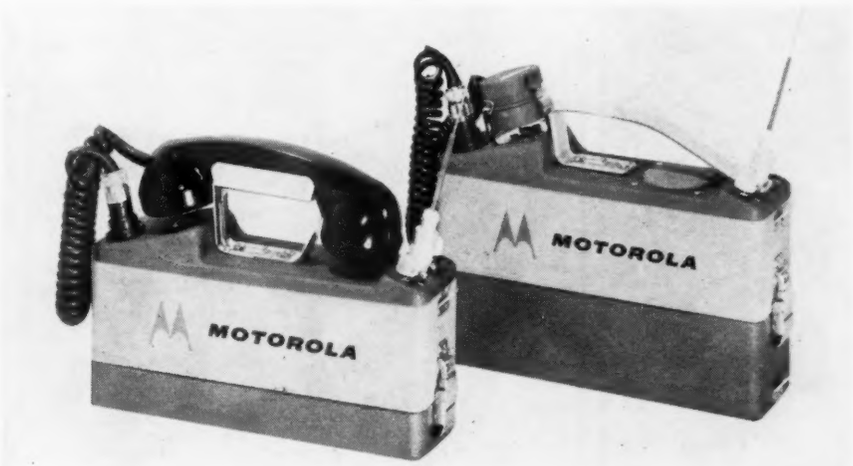
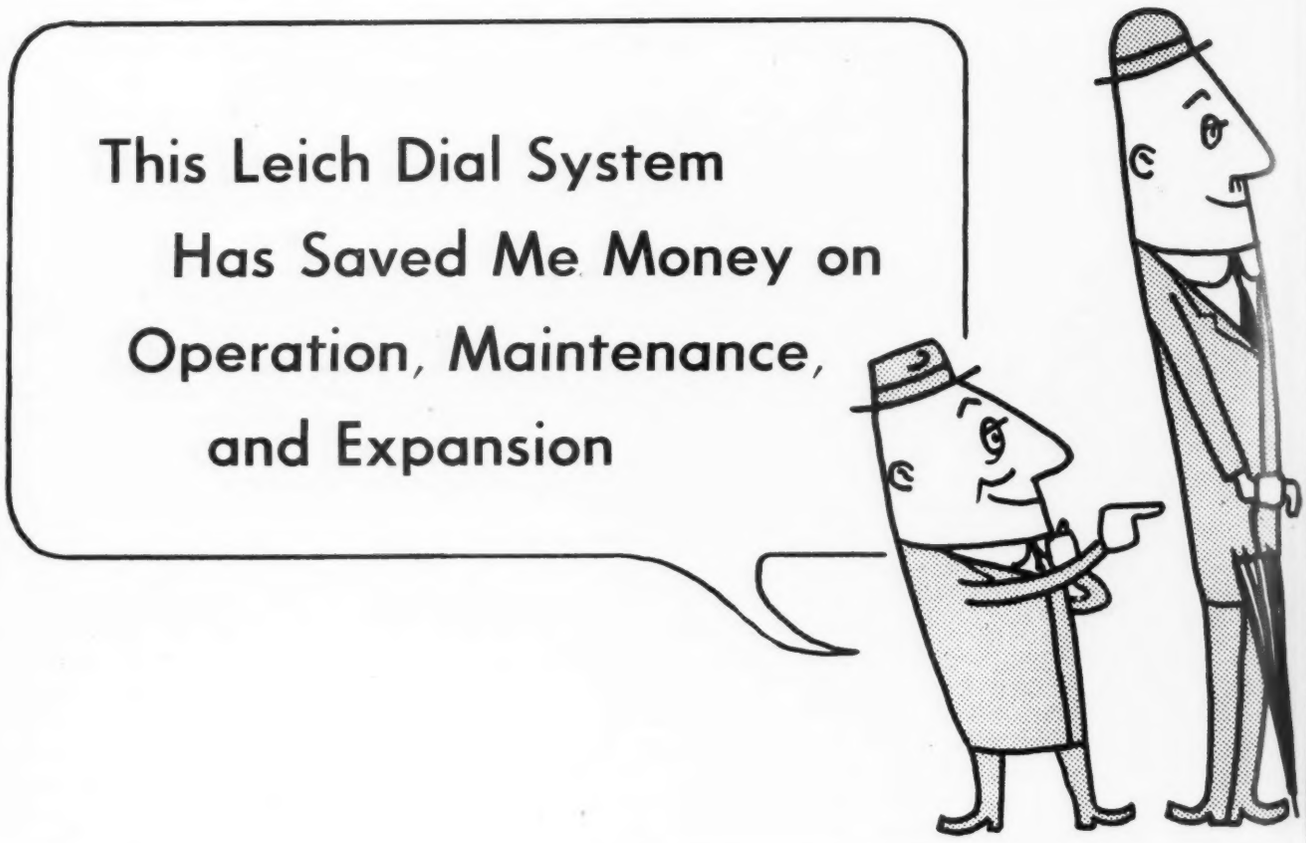


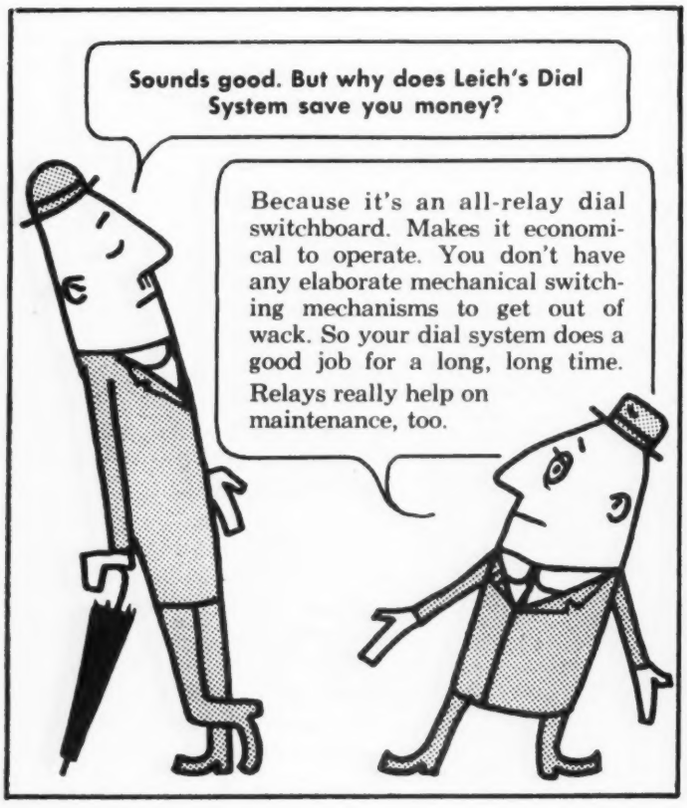
FIG. 220:—Motorola transistorized "Handie Talkie" portable radiophone designed for directing work from a distance as in prelashing telephone cable.

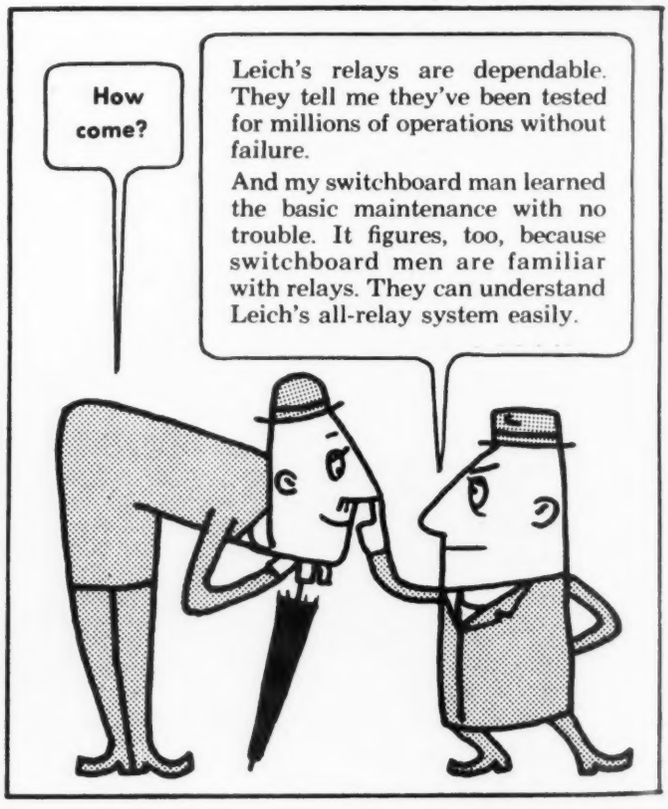
Use of Cable Blocks on Poles — Cable Leader

TO PULL IN the cable and messenger together without damage to the cable requires the use of special cable blocks designed to pass the cable without squeezing it against the strand. The cable block is illustrated in *Figure* 222, and the pulley is made of aluminum coated with rubber for protection of the cable passing over it.

Figures 223 to 226 show the various kinds of block frames used at end poles of the pulling section, straight-line poles, and inside or outside corners of pole lead. The block frames are installed with through bolts on the poles at the proper heights so that the cable can be attached later to suspension clamps and through bolts with minimum difficulty. The "C" block frame uses

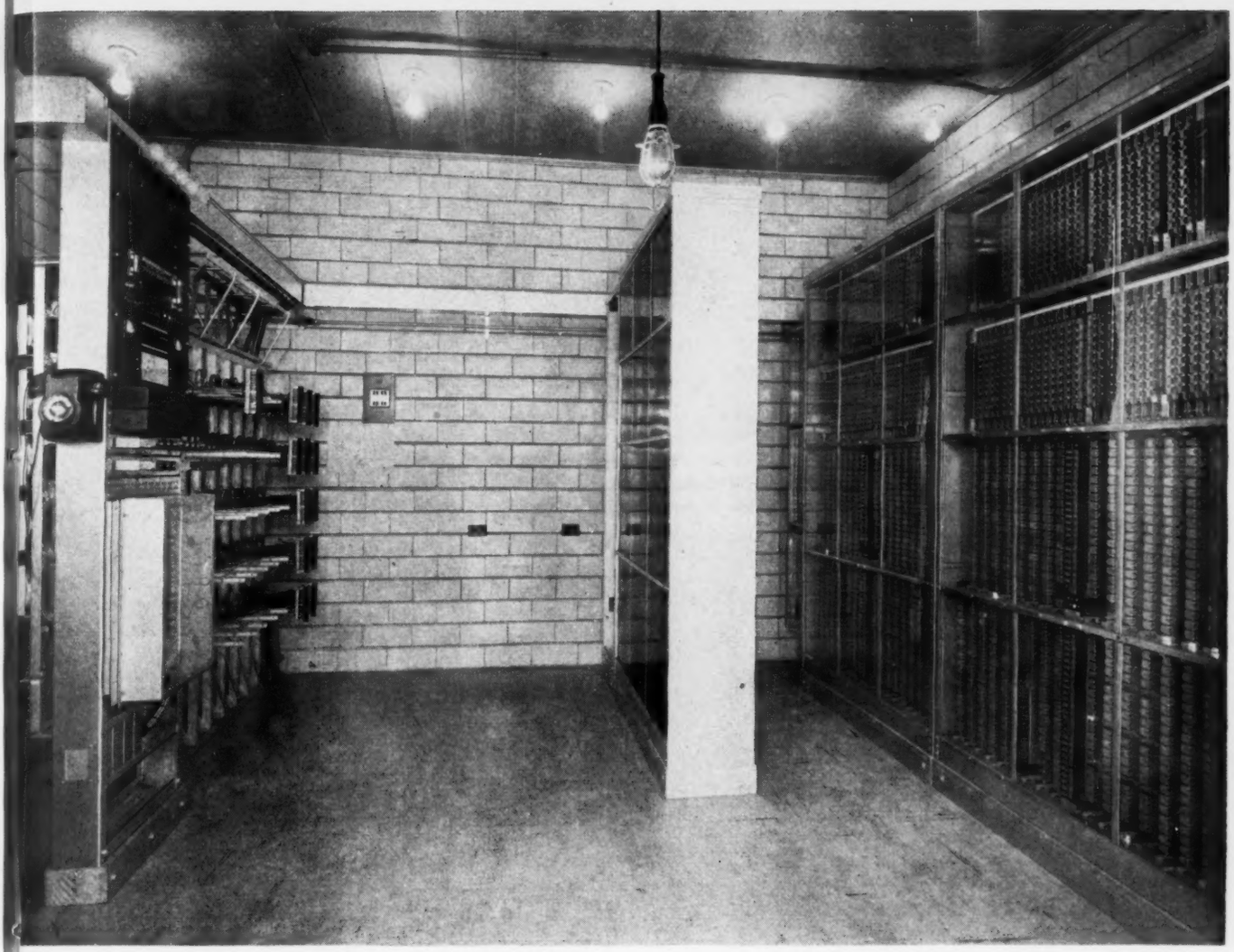


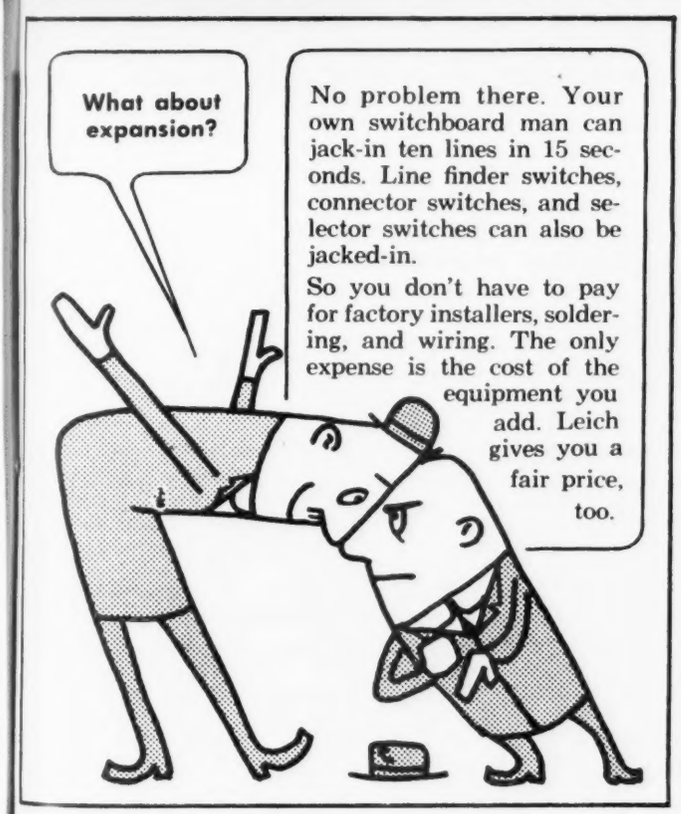

Sounds good. But why does Leich's Dial System save you money?
Because it's an all-relay dial switchboard. Makes it economical to operate. You don't have any elaborate mechanical switching mechanisms to get out of wack. So your dial system does a good job for a long, long time.
Relays really help on maintenance, too.


How come?
Leich's relays are dependable. They tell me they've been tested for millions of operations without failure.
And my switchboard man learned the basic maintenance with no trouble. It figures, too, because switchboard men are familiar with relays. They can understand Leich's all-relay system easily.

LEICH

LEICH SALES CORPORATION, 427 WEST RANDOLPH STREET, CHICAGO 6, ILLINOIS




What about expansion?
No problem there. Your own switchboard man can jack-in ten lines in 15 seconds. Line finder switches, connector switches, and selector switches can also be jacked-in.
So you don't have to pay for factory installers, soldering, and wiring. The only expense is the cost of the equipment you add. Leich gives you a fair price, too.

How can I learn more about Leich's Dial System?
You should write the Leich folks for a catalogue. Maybe a quotation, too. They're at 427 West Randolph Street in Chicago, Illinois.
LEICH

manufacturers of telephones, switchboards and related apparatus since 1907

PACIFIC COAST: 11401 WEST PICO BLVD., LOS ANGELES 64, CALIFORNIA SOUTHWEST: 1227 SLOCUM STREET, DALLAS 7, TEXAS

the same hole as the suspension clamp bolt, but holes for the block frames on corner poles are bored above the location of the corner suspension clamp.

To prevent the cable from wrapping around the messenger in the pulling operation, a leader with hinged lead weights is inserted between the pulley line and the cable end as shown in *Figures* 226 and 227. The weights fold up into the leader recesses in passing through the temporary pulleys and return to their original position, maintaining a vertical position and opposing the twisting tendency of the cable and messenger. Since the leader has a tendency to twist on entering the cable blocks, the front portion is curved as indicated in the illustration. This curved portion drops into the pulley groove on entering the block, causing the lead weights to contact the pulley face without turning over.

The twisting tendency is further reduced by using a winch line with left hand lay rather than a right hand lay. Occasionally, however, twisting may occur, in which case the man observing the progress of the leader signals the winch operator to stop the pull while he climbs the pole to restore the leader to the proper position.

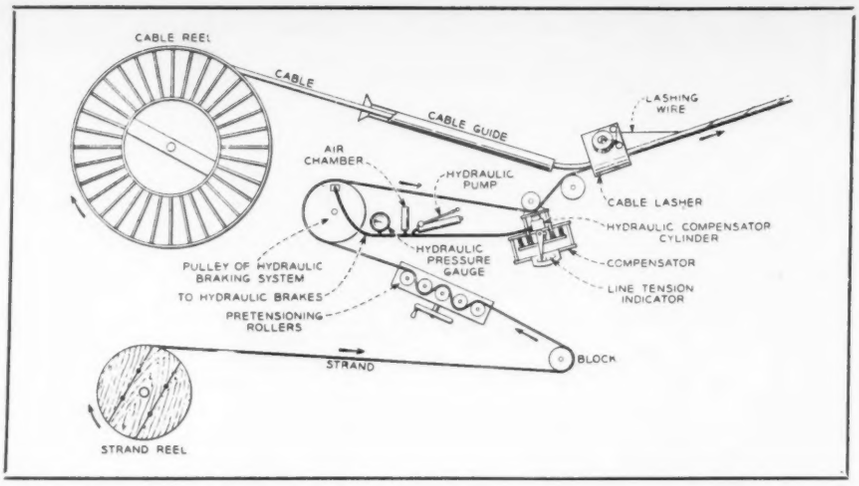


FIG. 221:—Schematic showing route of messenger strand and cable through cable prelashing machine. (Courtesy of Bell Telephone Laboratories)

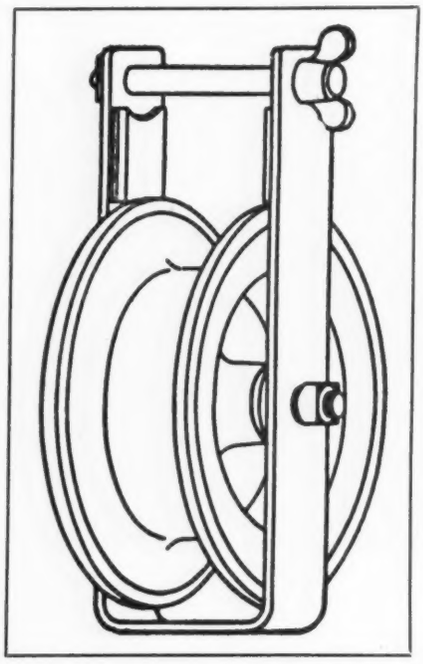


FIG. 222:—General Machine Products Company "E" cable block (with pulley) used with all cable block frames for supporting messenger strand and cable in the prelashing operation.

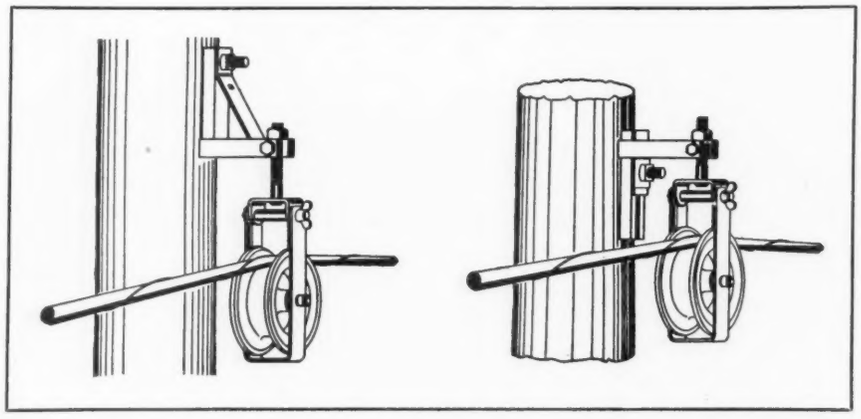


FIG. 223:—Left — "B" cable block frame for use on end poles of the pulling section. Right — "C" cable block frame employed on in-line poles including corners with up to 3-foot pull.

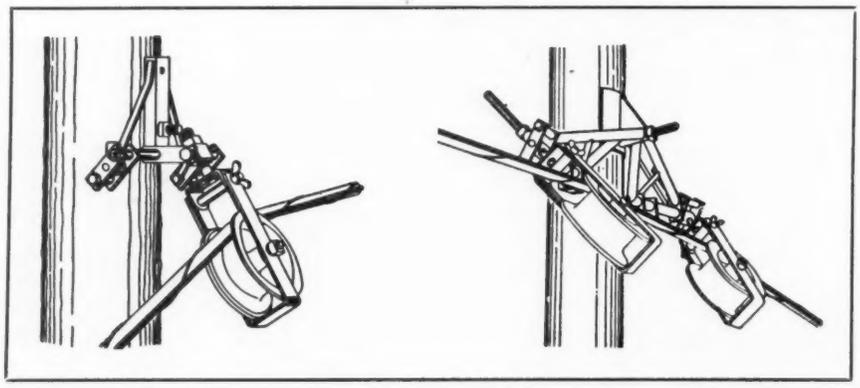


FIG. 224:—Left — D cable block frame for light inside corners (4-foot to and including 8-foot pull). Right — E cable block frame for heavy inside corners (pull over 8 feet). The E frame requires the use of two E cable blocks.

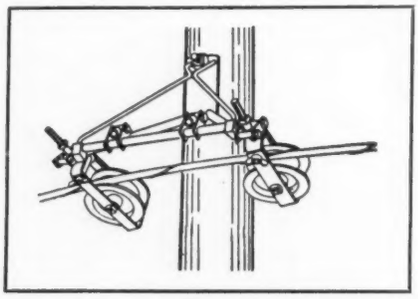


FIG. 225:—F cable block frame for outside corners with 4-foot pull and over. Requires the use of two E cable blocks.

Operation of The Prelashing Equipment

PRELIMINARY to the operation of the prelasher, the cable reel is loaded onto the trailer. This is ac-

complished by blocking the trailer wheels and lifting the trailer tongue with the truck winch line to tip the trailer back and rest its rear end on the ground. The cable reel is then rolled onto the trailer saddles with the spindle bar fastened in place with positioning collars K (*Figure* 219).

The trailer tongue is next pulled forward with the winch line to return the trailer to its normal position. The counterbalance assembly A facilitates the tilting operation by compensating for the weight of the lashing equipment and tensioning gear. To raise and lower the tongue requires running the winch line over a sheave on a spindle bar resting in the top brackets of the truck.

As a further precaution, the winch truck is moved ahead a short distance after loading the reel and before lowering the tongue to its horizontal position.

As indicated in *Figure* 218, the strand reel is placed on a reel mounting assembly attached to a rear cross member of the trailer. A jack on each side of the reel support raises the reel sufficiently off the ground to permit rotation of the reel. The illustration shows the strand feeding from the top of the reel. In the case of a large and full cable reel, the strand reel is arranged to feed the strand from the bottom to prevent abrasion on the cable layers. The strand reel may be mounted before or after the trailer is placed in its working position.

The correct placing of the trailer with respect to the line of the cable lead facilitates the prelashing operation and reduces strain on the equipment. With this objective in mind, the trailer is located as much as possible in line with the lead, and far enough back from the first pole of the pulling section to reduce to a minimum the upward angle of the cable and messenger leaving the nose sheave L (*Figure* 219).

The trailer tongue is adjusted to bring the center of the cable lasher and the top face of the nose sheave in line with the top face of the pulley of the cable block on the first pole, using the hydraulic jack H to raise the tongue to the nearest position for setting the foot post F permanently.

The final adjustment is then made with turnbuckle M, raising or lowering the cable lasher mounting O within limits. During the lashing operation, the operator readjusts the cable lasher mounting to the point where the cable and messenger exerts the minimum pressure on the nose sheave consistent with the necessity to avoid overloading the lasher.

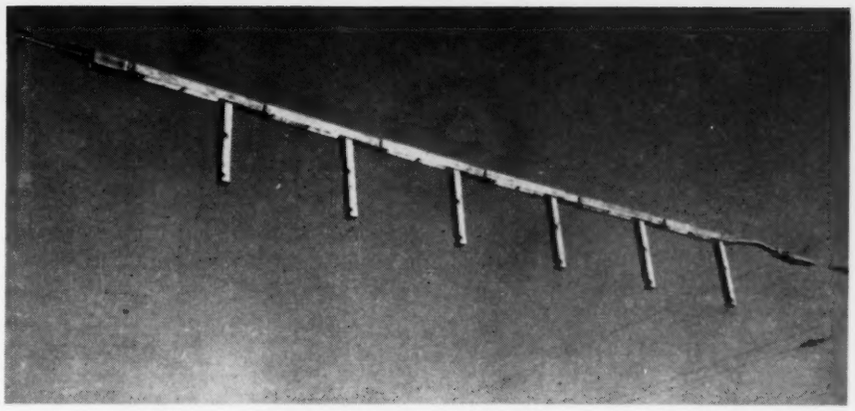


FIG. 226:—Cable leader showing curved portion that straightens out the leader when it enters a cable block and prevents twisting of the cable around the messenger. Chuck at rear end grips end of strand, and double hook holds end of lashing wire.

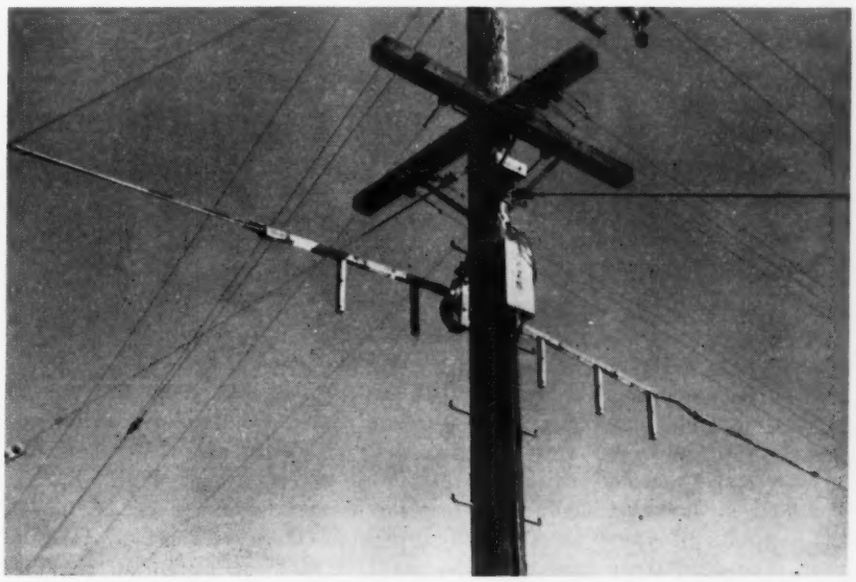


FIG. 227:—Cable leader passing through cable block on a pole. Note that each weight lifts up into a recess in the leader as it passes over the pulley face.

When the end of the pulling section is reached, the messenger is fastened to the last pole of the section, either by dead ending on the pole or by splicing to the messenger of the next section. The messenger may then be brought to its final tension by means of a ratchet hoist or by pulling with the truck winch.

Transferring Messenger With Cable to Permanent Supports

IN HANDLING prelashed cable, the fact that the cable and strand are under considerable tension should be taken into consideration. Equipment used in raising and supporting the cable and messenger combination should have adequate strength for the work and be securely fastened or held to avoid the possibility of accidents to workmen or damage to cable and equipment. Poles at dead end points and corners should be adequately guyed. Where temporary guys are placed, they should be of adequate strength and be securely anchored.

To raise and support the cable and messenger requires the use of the special tools shown in *Figure* 228. One tool, the "D" strand shifter consists of two hooks with grooves for the messenger and a lifting screw to raise the strand and cable off the block. To accomplish this, the strand shifter is mounted on top of the cable block frame and the two lifting hooks are placed under the mes-

senger. Turning the screw with a wrench raises the cable and messenger to the point where the cable block can be safely removed from the frame.

A cable guard (*Figure* 229) is then slipped in position over the cable. A spacer nut is run onto the cable suspension bolt, followed by a messenger clamp and outside nut. The strand shifter screw is again turned to raise the messenger to the clamp. It will be noted that the hook ends of the shifter are equipped with screws for adjusting the hooks to raise the messenger into the clamp grooves after which the nuts can be tightened in the usual manner.

FIG. 229:—B cable guard for protecting cable from contact with suspension clamps at poles.

At corner poles the double hook strand shifter is not practical and two single type (E) strand shifters must be employed. In this case, the lashing wire is clamped to the messenger several feet away from the pole on each side, and the wire is cut at the pole and temporarily unwrapped from the cable and strand.

The single strand shifters are mounted on the cable block frame in the supports provided for this purpose. The nuts are turned until the hooks take hold of the strand and lift it and the cable off the cable block pulley.

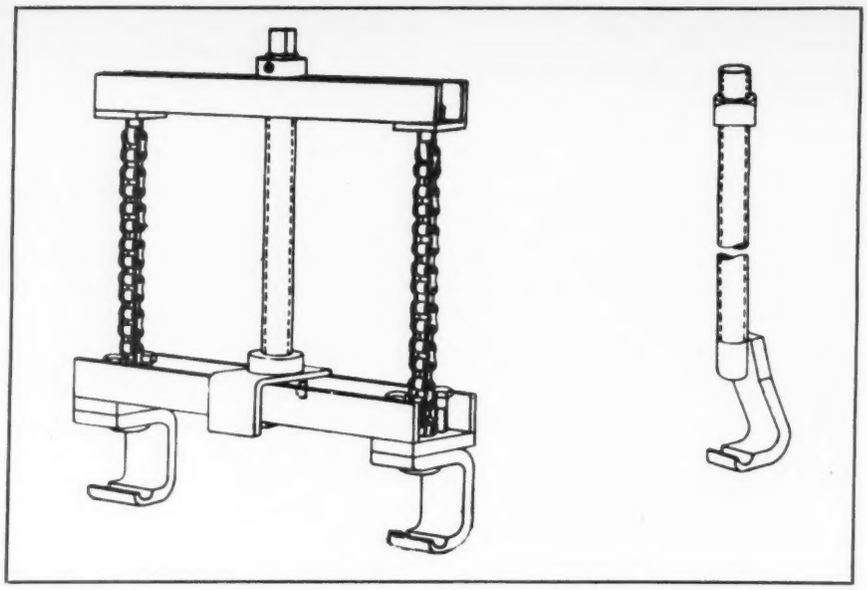


FIG. 228:—Left — D double-hook strand shifter for use on cable blocks at end and in-line poles. Right — E single-hook strand shifter for use at corner poles.

A corner type suspension clamp is placed on the messenger between the strand shifters and tightened in place. The shifter nuts are turned until the suspension clamp is sufficiently near to the pole to accommodate a pole strand connector used as a spacer. A hole is drilled through the pole in line with the center holes of the suspension clamp and the strand connector and a through bolt inserted for the permanent attachment of the suspension clamp.

The cable is supported past the corner pole by means of lashed cable supports. The lashing wire ends are rewrapped around the cable and messenger and terminated with lashing wire clamps as outlined earlier.

Care is required in transferring the cable and messenger to the permanent supports to avoid causing the cable to wrap around the strand. This work is started at one end and continued from one pole to the next in the same direction throughout the section. The men handling the transferring work are required to inspect the cable for twisting and always to turn the cable in the same direction to keep it under the messenger as the work progresses.—*To Be Continued.*

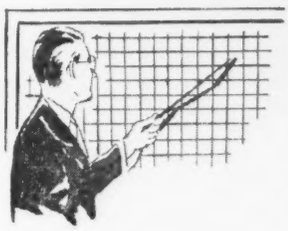
Tips For Drivers

ADVERTISING of the AT&T's Long Lines Dept. recently took to the highways for the first time. From Utah to New Jersey, 100 highway signs with the message "While you're away . . . Keep in touch by telephone" have been installed to remind touring Americans that the telephone can be a highly useful part of their travel plans.

These signs, generally 20 feet wide, are made of metal and coated with Scotchlite to reflect the headlights of oncoming automobiles. The locations were selected by Long Lines in cooperation with the Associated Companies and in almost every case are near concentrations of motels where auto travelers are most likely to spend the night. If outdoor telephone booths are ahead, the signs will indicate how far.

Starting at Salt Lake City, the signs follow Highway 30 across Wyoming, Nebraska, Iowa, Illinois, Indiana and Ohio to Pittsburgh. They are placed along entrances and exits of the Pennsylvania Turnpike and into New Jersey. This nine-state route was chosen because it represents a variety of conditions—a main highway in the West, one of several routes in the Mid-West, and a heavily traveled turnpike in the East.

The highway signs are part of Long Lines' overall advertising program designed to inform the public of the usefulness of long distance service as an aid to everyday living. Highway travelers are excellent prospects for long distance service, since surveys show that about 80 per cent of all trips — both business and vacation — are made by auto.



telephone ASSOCIATION activities

Rocky Mountain Independents Meet

Callister Heads Rocky Mountain Assoc.

NEARLY 225 telephone people attended the 1956 convention of the Rocky Mountain Telephone Association at the Hotel Utah, Salt Lake City, Utah, and participated in a convention that topped all previous ones, not only from the wealth of information gathered from the addresses but also from the reunion of friends and meeting of new ones, and from the equipment displayed by the manufacturers and suppliers.

President Ward W. Blazzard presided at the first convention session and introduced the Honorable Adiel F. Steward, Mayor of Salt Lake City. Mayor Stewart welcomed the guests and invited them to visit the scenic spots of the beautiful city of Salt Lake City.

Hugh A. Barnhart, vice president of USITA and president of the Rochester (Ind.) Telephone Co., spoke to the group on the subject "USITA Helps Build Telephone Industry."

Discussing the numerous things the United States Independent Telephone Association has accomplished in behalf of the telephone industry during the past several years, Mr. Barnhart told the convention that through the good work of the USITA Committee on Highway Relocation Costs, Executive Vice President Bailey, state telephone organizations and "you telephone people in the field," we secured a magnificent legislative victory in obtaining facility removal reimbursement costs in connection with Federal Air Highway Legislation.

"Relative to the reimbursement provisions," he said, "which are so important to every telephone company in the United States, wherever interstate highways are built 90 per cent of the relocation costs will be defrayed by the federal government. On all other federal highways reimbursement will be on a 50-50 basis."

Warning that this does not mean that telephone companies are assured of reimbursement, Mr. Barnhart emphasized that "our work is only half done."

"From now on," he said, "all effort must be carried on at local levels if your states are to provide reimbursement to utilities for moving facilities. You must organize now, see every candidate for the Senate and House of your State Assembly, get all utilities into the act, provide a bill to be introduced, and then work every day and hour until the bill is passed by both houses and signed by your governor. Without such a state law many telephone companies will find that the costs of moving their lines will provide a financial burden which may take years to pay or force many to sell out."

Referring to other accomplishments of USITA, Mr. Barnhart commented that "By working constantly the USITA, aided by telephone people all over the country, was able to retain the provisions exempting switchboard operators at public telephone exchanges having less than 750 stations."

"However," he said, "the fight to eliminate this exemption or lower the ceiling will be carried on at the next session of Congress. We can assure you our organization will be ready

DIRECTORS OF Rocky Mountain Tel. Assoc., Standing (left to right):— ROBERT BROWN, Parma, Ida.; C. M. HART, Kingman, Ariz.; RULON CALLISTER, Delta, Utah; FLOYD L. REYHER, Haxtun, Colo.; WARD BLAZZARD, Kamas, Utah; EARLE CRANDALL, Pinedale, Wyo.; C. W. HAAS, Bigtimber, Mont. Seated (left to right):—J. W. "DICK" BAKER, Coeur d'Alene, Ida.; M. O. GREGO, Sundance, Wyo.; D. A. McLEAN, Denver, Colo.; T. CLARK CALLISTER, Fillmore, Utah; J. W. CORBIN, Moab, Utah; R. A. MANUEL, Browning, Mont.; C. A. BLAKENEY, Carlsbad, N. M. Those absent when picture was taken: J. F. MONSEN, Aberdeen, Ida.: J. F. TIPTON, Espanola, N. M.; J. F. THIELE, Pagosa Springs, Colo.

Now–you can get Reliable

Reliable 2000-series Outdoor Protector

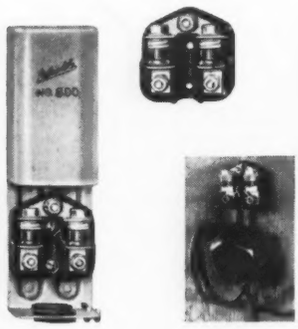
Offers unusually simple, neat installation. May be wired and mounted without removing fuses or brackets. Reversible fuse mount is molded phenolic, with contoured shield that aligns the interior wires, keeping them away from line side of fuse connections.

Neoprene base has entrance-sealing slots. Base is tapered so cover fits insect-tight, weathertight.

Metal parts either bronze, plated bronze, aluminum, or stainless steel. Aluminum cover and mounting bracket. UL-appr. 7-amp. ceramic fuses and Reliable No. P-495 self-cleaning, sawtooth discharge blocks.

Cat. No.	Type No.	Fuse No.	Shpg. Wt. Lbs. Per C
S-8290	2000	55-L	110
S-8292	2000-C	55-L	110
S-8294	2000-H	77-L	110
S-8296	2000-F	27-L	110

Reliable Fuseless Station Protectors



Three models available: No. 700, for indoor mounting; No. 800 (in metal case), and No. 801 (in Neoprene case), for outdoor mounting.

These protectors use the No. 504 Protector Units which provide carbon to carbon air gap protection, and a secondary grounding element for high currents. The Protector Unit grounds permanently only when necessary. Types 700 and 800 listed by Underwriters' Laboratories and meet all requirements of the 1953 National Electric Code (Article 800).

Fuseless Station Protectors

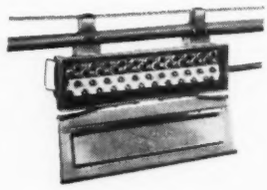
Cat. No.	Type No.	Std. Pkg.	Shpg. Wt. Lbs. Per C
S-2237	*700	2	27
S-2236	*800	2	40
S-2241	801	2	31
S-2238	504 Protector Unit	10	2½

Fuseless Cable Protectors

Cat. No.	Type No.	Std. Pkg.	Shpg. Wt. Lbs. Per C
S-2243	700A	2	27
S-2240	800A	2	40
S-2244	801A	2	31
S-7541	506 Protector Unit	10	2½

*Approved and listed by Underwriters' Laboratories.

Reliable Type ST Strand Cable Terminals –



For strand, pole, and wall mounting, with reinforced cast resin binding post terminal blocks. Available with 24 gauge double paper insulated lead sheathed cable stubs, or 24 gauge plastic sheathed plastic insulated cable stubs. Suitable for gas pressure, and are made in three categories: Unprotected; Protected; Multiple Fuseless Station Protected.

The 6-, 11- and 16-pair terminals are equipped with cable stub entrance holes in each end for reversal of stubs. All housings have individual drop wire entrance grommets which keep the terminal weathertight and all metallic parts are aluminum or stainless steel.

The 26-pair terminal housing and stub are reversible without changing the terminal block. Bracket furnished for pole or wall mounting on 26-pair only. Protection is not lost when terminal cover is opened. For Cable Protection use No. 506 Protector Units; for Station Protection use No. 504 Protector Units.

Unprotected Cable Terminals

Cat. No.	Type No.	Capacity (Pairs)	Protector Unit No.	Std. Stub Length	Type of Stub	Shpg. Wt. Lbs. Ea.
			Unprotected			
S-8318	ST6	6	"	4½'	Lead (DPI)	6
S-8319	ST11	11	"	4½'	"	6½
S-8320	ST16	16	"	4½'	"	8
S-8321	*ST26	26	"	7'	"	10½
S-8330	ST6A	6	"	4½'	Plastic (PE)	6
S-7525	ST11A	11	"	4½'	"	6½
S-7526	ST16A	16	"	4½'	"	8
S-7544	*ST26A	26	"	7'	"	10½

Protected Cable Terminals

Cat. No.	Type No.	Capacity (Pairs)	Protector Unit No.	Std. Stub Length	Type of Stub	Shpg. Wt. Lbs. Ea.
S-8322	ST6P	6	506	4½'	Lead (DPI)	7
S-8323	ST11P	11	506	4½'	"	8
S-8324	ST16P	16	506	4½'	"	10
S-8325	*ST26P	26	506	7'	"	13
S-8326	ST6PS	6	504	4½'	"	7
S-8327	ST11PS	11	504	4½'	"	8
S-8328	ST16PS	16	504	4½'	"	10
S-8329	*ST26PS	26	504	7'	"	13
S-8331	ST6PA	6	506	4½'	Plastic (PE)	7
S-7534	ST11PA	11	506	4½'	"	8
S-7535	ST16PA	16	506	4½'	"	10
S-7537	*ST26PA	26	506	7'	"	13
S-8332	ST6PSA	6	504	4½'	"	7
S-8333	ST11PSA	11	504	4½'	"	8
S-8334	ST16PSA	16	504	4½'	"	10
S-8335	*ST26PSA	26	504	7'	"	13

*For Pole and Wall Mounting Only.

Lead Cable Stubs: (DPI) Double Paper Insulated Lead Sheath Cable. 24 gauge is standard.

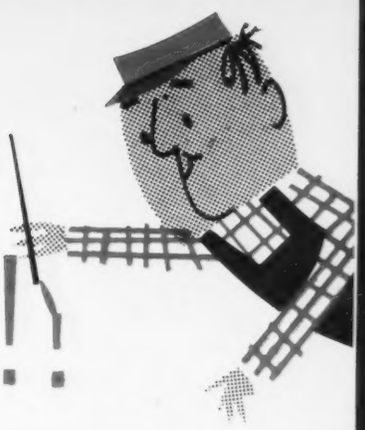
(PE) denotes 24 gauge Polyethylene plastic stub. Polyvinyl chloride stubs available on request.

Cook Hy-Cap Single Circuit Power Cross Protector

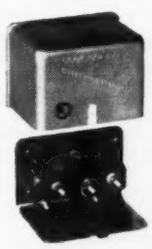
Furnishes protection against contact between telephone and power lines and against lightning. Consists of alloy cover, 3 carbon electrodes on a porcelain base, 3 copper wire leads, and a bracket for easy mounting.

Cat. No.	Type No.	Description	Wt. Lbs.
S-8542	501-40	Single Pair	1¼

these Cook and leaders at Automatic!!



Cook "Interceptor" Fuseless Protector



The Cook Minigap, is a fuseless subscriber protector for indoor or outdoor mounting. It is ideal for open wire pole or cross arm installation ahead of the subscriber dropwire where protection is desirable for joint occupancy with power circuits.

The Interceptor is designed to meet the Underwriter's "Standard for Protectors for Communication Circuits." Consequently, both Minigap arresters will pass, simultaneously, a current of 30 amperes for 15 minutes without destruction.

For indoor mounting the Interceptor consists of a moulded Bakelite base with heavy everdur terminal and ground studs and two #41-350 Minigap arresters.

For outdoor mounting the Interceptor is enclosed in an all metal, corrosion resistant, weatherproof housing with grommetted bracket.

The self-cleaning, sealed Minigaps, #41-350, are screw mounted in Bakelite with ground stud and bussed circuits inserts moulded.

Minigaps are keyed to fit the individual protector air gap or voltage breakdown requirements so as to prevent incorrect installation with subsequent excessive maintenance costs.

Each arrester consists of two carbons with a thermoplastic acetate dielectric providing an air gap, which in the event of heavy or prolonged discharges will allow contact between the discharge blocks.

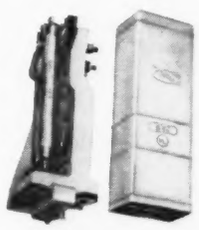
Cat. No.	Type No.	Description	Wt. Per 100 lbs.
S-2231	501-150	Outdoor	56
S-2232	501-165	Indoor	30
S-2233	41-350	Minigap	2½

Cook Drop Wire Connector

This two wire connector is especially developed for better insulation, to simplify installation and testing, occupy less space and improve the connecting methods of subscriber drops to open wire. The wire entrances are sealed with a Neoprene gasket for long life.

Cat. No.	Type No.	Description	Wt. Per 100 Lbs.
S-3799	563-30	Drop Wire Connector	65

Cook O-9u Sub-Station Protector



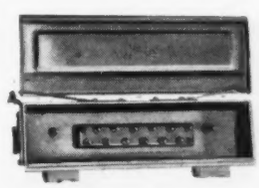
The body is a single piece of heavy, white-glazed, low-absorbent porcelain. Fuse and arrester clips are of phosphor bronze. Equipped with two Tru-Gap dischargers and two A-9u 7-ampere lavite fuses.

Cat. No.	Type	Description	Wt. Lbs.
S-8600	O-9u	With A-9u Lavite Fuses 7 amp.	1¾

Type 07, 012, and 052 Protectors

Cat. No.	Type	Description	Wt. Lbs.
S-2201	07	With A-7 Wood fuses 5 amp.	1¾
S-8532	07	With A-7 Wood fuses 7 amp.	1¾
S-2206	012	With A-12 Lavite fuses 5 amp.	1½
S-2208	052	With A-52 Fibre fuse 7 amp.	2

Reliable Wire Terminals – Protected and Unprotected



Terminates plastic cable and joins drop or bridle wire and Rural Distribution Wire.

Protected terminals have molded resin-filled binding post block, and weathertight aluminum housing and protector units, just as in the Strand Terminal line. Terminals with No. 506 protector units provide for lightning discharges, power fault current — can be used as protected distribution terminals.

Cat. No.	Type No.	Capacity (Pairs)	Type Of Block	Protector Unit No.	Shpg. Wt. Lbs. Each
S-8336	*5503	5	Porcelain	None	2
S-8337	†5504	6	Resin filled	504	3
S-8338	†5505	6	Resin filled	None	4
S-8339	†5506	6	Resin filled	506	5
S-8340	*5507	6	Porcelain	None	3
S-8342	†5509	6	Porcelain	None	5
S-8344	†5524	11	Resin filled	504	6
S-8345	†5525	11	Resin filled	None	5
S-8346	†5526	11	Resin filled	506	6
S-8347	†5544	16	Resin filled	504	8
S-8350	†5545	16	Resin filled	None	6
S-8352	†5546	16	Resin filled	506	8

*Formed aluminum housing for pole or cross arm mounting.

†Cast aluminum housing for strand, pole or wall mounting.

WIRE TERMINAL BLOCKS

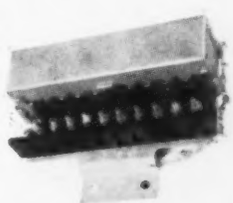
Cat. No.	Type No.	Capacity (Pairs)	Type Of Block	Protector Unit No.	Shpg. Wt. Lbs. Each
S-8210	5514	6	Resin filled	504	2
S-8211	5515	6	Resin filled	None	1
S-8212	5516	6	Resin filled	506	2
S-8213	5517	6	Porcelain	None	1
S-8214	5554	11	Resin filled	504	4
S-8215	5555	11	Resin filled	None	2
S-8216	5556	11	Resin filled	506	4
S-8217	5564	16	Resin filled	504	6
S-8218	5565	16	Resin filled	None	3
S-8219	5566	16	Resin filled	506	6

Reliable Wire Terminal

Used for taking drops off Urban, Suburban, and Rural Distribution Wire. Molded plastic.

Cat. No.	Type No.	Cap. Pairs	Shpg. Wt. Lbs., Ea.
S-3796	5500	1	½

Cook Type 7 High Potential



Protects drop wires and cables terminating in unprotected cable terminals where constant static drain is required. Five-pair capacity.

Non-corrosive metal hood. Everdur studs, and galvanized mounting bracket. Phosphor bronze spring clips accommodate non-grounding Tru-Gap Dischargers.

Cat. No.	Type No.	Description	Wt. Lbs.
S-2193	7	Complete with Dischargers	3

In fact, we have a full line of protective equipment made by these famous manufacturers—all the products you see here and many others. You can depend on Cook and Reliable quality. It means lower maintenance costs and a healthier-looking profit-and-loss statement when you're figuring up the books.
You can order proved-economical Cook and Reliable equipment by calling your nearest Automatic representative or your A. E. Sales Corporation warehouse.

AUTOMATIC'S 5 FRIENDLY WAREHOUSES:

George Ferguson, Mgr.	"Michie" Hester, Mgr.	Ed. J. Chok, Mgr.	Fran Batcher, Mgr.	Gene Martin, Mgr.
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Chicago 7, Illinois	Richmond 21, Va.	Portland 10, Oregon	Johnson City, N. Y.	Kansas City 8, Mo.
HAymarket 1-4300	Tel. 6-9280	CApital 3-7244	Binghamton 7-8507	HArrison 1-4720

AUTOMATIC ELECTRIC

GENERAL TELEPHONE SYSTEM

ORIGINATORS OF THE DIAL TELEPHONE

to opose any changes then and for all time to come . . . ."

Following the reports of President Blazzard and Secretary-Treasurer J. W. Baker of the accomplishments of the Rocky Mountain Telephone Association during the year just past, J. W. Heckman, vice president and general manager of The Mountain States Telephone & Telegraph Co., Boise, Idaho, addressed the convention on the subject "Problems of Small Community Operations."

At the second session the opening address was presented by Lloyd B. Dodds, general information manager of the Mountain States Telephone & Telegraph Co., Denver, Colo. Mr. Dodd's subject was "A Look into the Future" with demonstrations of recent Bell Laboratories' developments.

At the final session Dr. Elroy Nelson, vice president and economist of the First Security Corp., Salt Lake City, talked on the subject "Economic Patterns in The Inter Mountain Region."

The final speaker was Don Hunsaker, vice president, General Telephone Co. of the Southwest, San Angelo, Texas. His topic was "Who is the Telephone Company?"

Most of the afternoons of the two-day session were spent in attending the forums for the discussion of mutual day-to-day operating problems with personnel of The Mountain States Telephone & Telegraph Co. and members of the Independent companies being present. These forums were well attended and much was accomplished in smoothing out problems brought to their attention.

Election of officers and directors was held at the annual business meeting of the Association on September 21. Officers elected are: President, Rulon Callister, Millard County Telephone & Telegraph Co., Delta, Utah; Vice President, Floyd L. Reyher, Haxton (Colo.) Telephone Co.; and Secretary-Treasurer, J. W. Baker, 805 Garden Avenue, Coeur d'Alene, Idaho.

Directors of the Rocky Mountain Association are: Mr. Baker; C. C. Blakeney, General Telephone Co. of Southwest, Carlsbad, N. M.; Ward W. Blazzard, Kamas-Woodland Telephone Co., Kamas, Utah; Robert Brown, Parma Telephone Co., Parma, Idaho; Mr. Callister; T. Clark Callister, Millard County Telephone & Telegraph Co., Fillmore, Utah; J. W. Corbin, Midland Telephone Co., Moab, Utah; Earle Crandall, Pinedale Telephone & Telegraph Co., Pinedale, Wyo.; Donald Dickson, Project Mutual Telephone Co., Rupert, Idaho; Merle Ebbe, Power & Light Co., Kalispell, Mont.; C. W. Haas, Big Timber Home Telephone Co., Big Timber, Mont.; C. M. Hart, Citizens Utilities Co., Kingman, Ariz.; R. A. Manuel; Browning Telephone Co., Browning, Mont.; D. A. McLean, The Mountain States Telephone & Telegraph Co., Denver, Colo.; J. F. Monsen, Aberdeen Telephone Co., Aberdeen, Idaho; Mr. Reyher; J. E. Tipton, Espanola Telephone Co., Espanola, N. M.; and M. O. Trego, Mona Short Line Telephone Co., Sundance, Wyo.

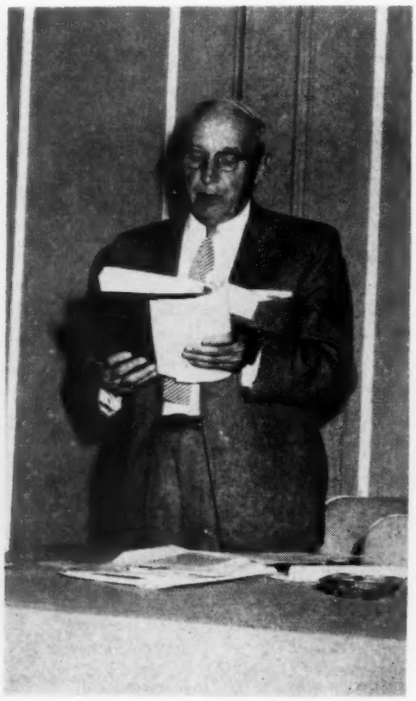
Members of the Executive Committee are Rulon Callister, Ward Blazzard, Floyd L. Reyher, D. A. McLean, and J. W. Baker.

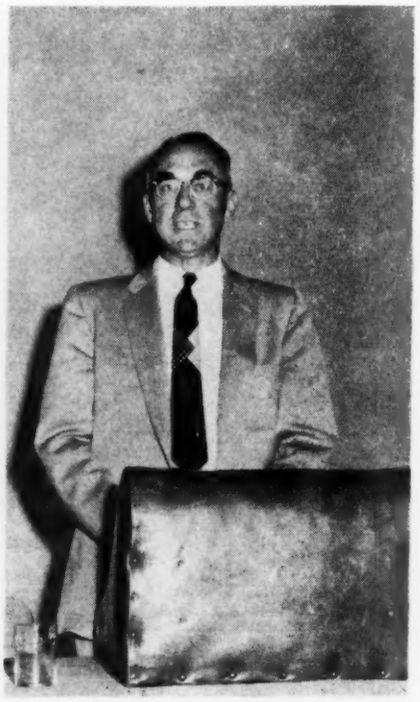
Arkansas Independents Meet

H. R. Wilbourn, Jr., Elected President

TOP HONORS in the Customer Relations Program of the Arkansas Telephone Association went to the Public Utilities Co., Crossett; Rural Telephone Co., Inc., Elaine, and General Telephone Co. of the Southwest, Texarkana, and representatives of each company were awarded bronze plaques.

The awards were given the open-





Rocky Mountain Convention speakers (l. to r.): J. W. HECKMAN, vice pres. & gen. mgr., Mountain States Tel. & Tel. Co., Boise Ida.; J. W. BAKER, sec.-treas., Rocky Mountain Tel. Assoc.; Dr. ELROY NELSON, vice-pres. & economist, First Security Corp., Salt Lake City, Utah.

"We'll be gone all day. We're hiking clear to the next pole!"

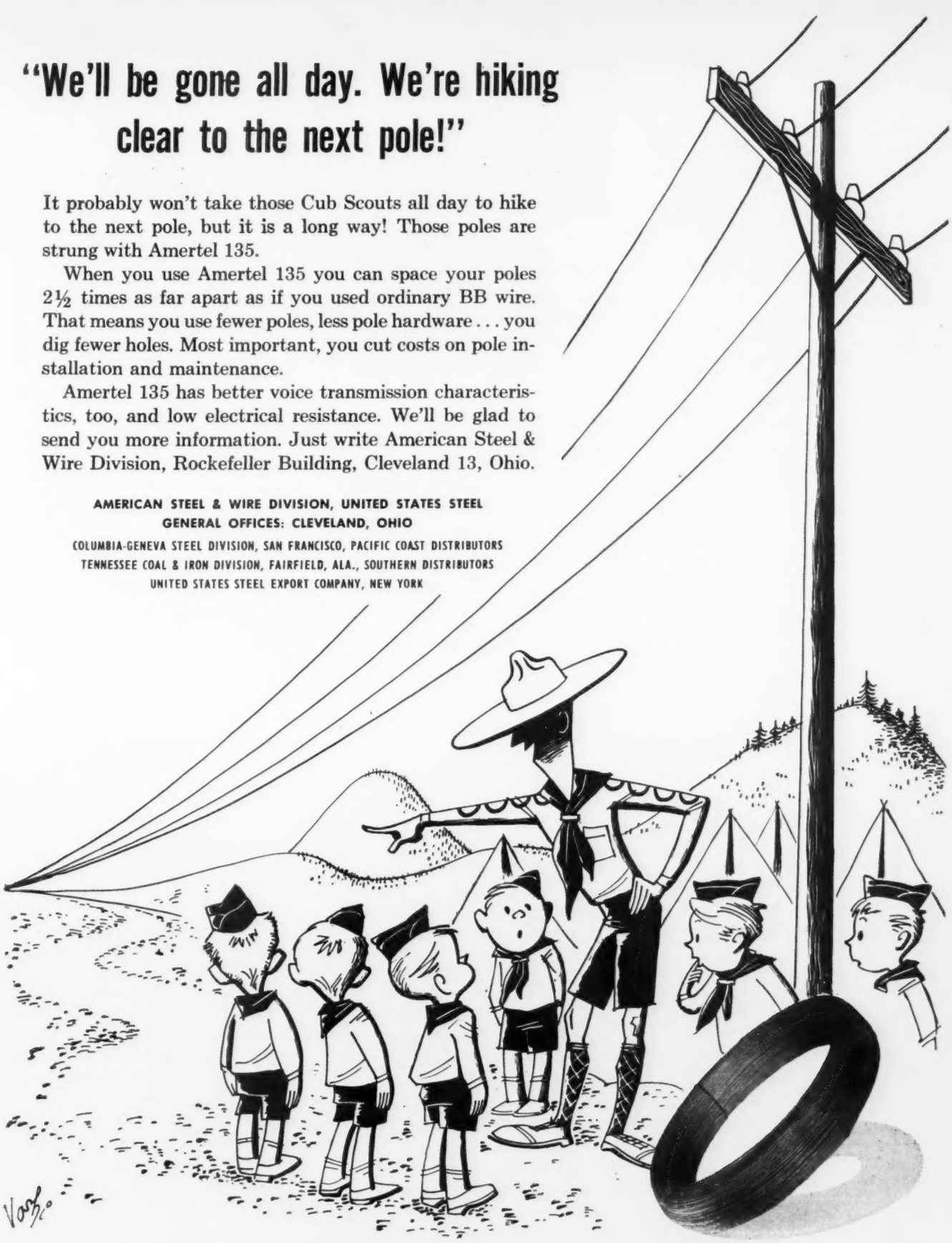
It probably won't take those Cub Scouts all day to hike to the next pole, but it is a long way! Those poles are strung with Amertel 135.

When you use Amertel 135 you can space your poles 2½ times as far apart as if you used ordinary BB wire. That means you use fewer poles, less pole hardware . . . you dig fewer holes. Most important, you cut costs on pole installation and maintenance.

Amertel 135 has better voice transmission characteristics, too, and low electrical resistance. We'll be glad to send you more information. Just write American Steel & Wire Division, Rockefeller Building, Cleveland 13, Ohio.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL
GENERAL OFFICES: CLEVELAND, OHIO

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK



USS TIGER BRAND AMERTEL

TELEPHONE & TELEGRAPH WIRE

UNITED STATES STEEL

ing morning of the Arkansas convention at the Arlington Hotel in Hot Springs on September 17 with more than 300 in attendance.

Honorable mention went to Union Telephone Co., Smackover; Mountain Home Telephone Co., Mountain Home, and Arkansas Telephone Co., Inc., Clinton.

In presenting the awards, special attention was given to the companies that participated in the program and had done excellent jobs in acquainting subscribers with services and the telephone industry in general.

John W. Carter, retiring second-term president, opened the convention with some hard, down-to-earth advice about rates, future legislation, accounting, modernization of facilities, cooperation with the Public Service Commission, and keeping the association one of the most "Independent" segments of the industry.

Highlighting the first morning of the convention, State Senator Marvin Melton, Arkansas' leader in conservation of natural resources, presented his program for conserving the state's abundance of water for the use of future industries in the state.

Tom Mull, director of the State Game & Fish Commission, and well known sportsman, brought to the convention his color movies of fishing in Arkansas and duck hunting with the bow and arrow.

Monday evening, the officers and board entertained with a reception, followed by Phydeaux (the educated pup) and the Droodler, and the Marked Tree Ensemble, which represented Arkansas at the recent Chicago meeting of the Independent Telephone Pioneer Association.

On Tuesday, George Verity, counsel of the Oklahoma Telephone Association, discussed rate making in the Independent exchange.

Mr. Verity emphasized that responsibility for good service lies directly with the company and that to give adequate service the company must have a reasonable rate. He said that in order to determine a reasonable rate for approval of the Commission the company must have the proper accounting records.

OF SPECIAL interest to Arkansas conventioners was Lincoln-Desha Telephone Company's 1st place honor in the County Fair Float Division.

Mr. Verity's remarks and experiences were especially timely and well received as the Arkansas Commission will adopt a System of Accounts.

Jeff Williams, dynamic and well-known lecturer on current problems facing every industry, and George Rohlfing, successful businessman and president of Excavations, Inc., specializing in the shipment and sale of "Prefabricated Holes," completed the morning session.

New officers are H. R. Wilbourn, Jr., Little Rock, president; Carl Moore, Harrison, first vice-president; John Shaffer, Gentry, second vice-president; J. D. Garrett, Jr., Lewisville, secretary-treasurer; Lois Kehoe, Little Rock, executive secretary. The board consists of: S. A. Lane, Russellville; R. L. Bankson, Little Rock; W. L. Bryant, Leachville; Omer Sanders, Danville, and Richard L. Thompson, Alma.

Mr. Carter, in closing the convention business sessions, reminded members of the work completed in the foregoing year — especially of the new rural pole contact contract with Arkansas Power & Light providing for 50¢ charge in the rural areas, which will boost rural telephone coverage; of the work ahead in the legislative field to preserve the 750-station exemption, and the new highway program which will affect part of the companies.

He also reminded the audience of the vast strides in the industry in the past five years — of the 55,000 station gain in Arkansas, almost half of which was in rural areas receiving either poor service or no service at all.

Of special interest to the conventioners was Lincoln-Desha Telephone Company's 1st place honor in the County Fair Float Division. Mrs. Adair, who designed the float, used authentic 100 year old dresses and an ancient switchboard to depict the telephone of yesterday, then followed with the modern telephone of today, and the teen-agers' telephone of tomorrow.—*Lois Kehoe, executive secretary, Arkansas Tele. Assoc.*

Minnesota Holds Fall Conference

175 Attend Second Annual Conference

MORE THAN 175 Minnesota telephone industry men and women attended the second annual telephone industry Fall Conference at Curtis Hotel, Minneapolis, on Sept. 27-28.

The two-day meeting, sponsored by the Minnesota Telephone Association, Inc., consisted of seven panel discussions on key subjects and a demonstration and explanation of new communications developments by Eldon Eckles, Blue Earth, MTA president, and John D. Villas, Northwestern Bell Telephone Co., Minneapolis. Questions from the floor followed each of the panel talks.

The panels were staffed by Independent owners and managers, Northwestern Bell personnel, REA officials, several accountants specializing in the telephone field and two safety experts.

Three of the eight sessions were devoted to accounting and probed such subjects as plant depreciation, cash controls and pay-station accounting and analyses of statements.

"What's New In Radio?"

USITA Radio Committee Report*

C. H. McLEAN, chairman of the USITA Radio Service Committee, told the Plant Conference that in the field of communications many new developments are underway — electronic switching, the experimental picture-phone, small two-way radio sets to be worn by individuals, much in the manner of the Dick Tracy wrist-watch radio featured in the comic strips, closed circuit television and many others.

C. H. McLEAN,
Chairman, Radio Service Committee & Subcommittee on Carrier Coordination.

"The telephone industry," he said, "has no quarrel with such developments, only to the extent that their use of the radio spectrum may render inoperative that portion assigned for communication purposes even if such allocations are on a shared basis. In fact, radio frequency bands available to common carriers below 6500 Mc are becoming so inadequate for common carrier operation that considerable development work is taking place in the 11,000 Mc region, the next highest allocation for common carrier operation. Of interest in this connection is the fact that more than 20 per cent of the Bell System Toll faciliites are now derived by radio."

Explaining that with the present activity in electronics, the FCC is pressed for frequency space, Mr. McLean stated that this has led to the consideration of new techniques that are of interest, such as single side band operation which permits upwards to four voice channels to operate on substantially the same radio carrier space now occupied by one channel with double side band operation.

"Some indication of things to come with single band is covered in FCC Docket No. 11628," he said. "Channel splitting, better described as reduced channel spacing, has been adopted by the FCC in Docket No. 11253 for the 152-162 Mc band; thus, by operating at half the present spacing for future assignments, additional channels are provided. For new equipment, the effective date of meeting the new 30 Kc for adjacent areas is two years hence. For present licensees, all equipment, including existing equipment must comply with the new standards within seven years from date. The disposition of the new channels made available by channel splitting will be followed closely by the Radio Committee on behalf of the Association."

Referring to the fact that the Radio Committee has consistently urged Independent telephone companies to provide for tomorrow by taking full advantage of radio as a means of meeting public service demands while there still was frequency space available, Mr. McLean noted that many Independents are active in radio and are making use of the too few channels available for assignment to common carriers.

"When it was prophesied," he said, "that there would be competition from others for the use of some of the bands in which common carriers had an interest, it was hardly anticipated that some of this competition would come from the family kitchen, so to speak, or from industrial operations, some of which rate the communications industry as a valued customer for their products.

"Such is the case of the 890-940 Mc band, currently an important part of the spectrum for common carrier operation. This band, as allocated, is shared with Industrial, Scientific and Medical (ISM) on the basis that common carrier use will be on an interference free basis to ISM. However, to our knowledge, there have been no assignments under the ISM classification since the band was primarily allocated for this category at the In-

**This report was presented October 15 at the USITA Plant Conference, Conrad Hilton Hotel, Chicago, Ill.*

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PUBLISHING CORP.
7720 N. Sheridan Rd.
Chicago 26, Ill.

Please send a free copy of the November 1956, issue of TELEPHONE ENGINEER & MANAGEMENT with my compliments to the persons listed below.

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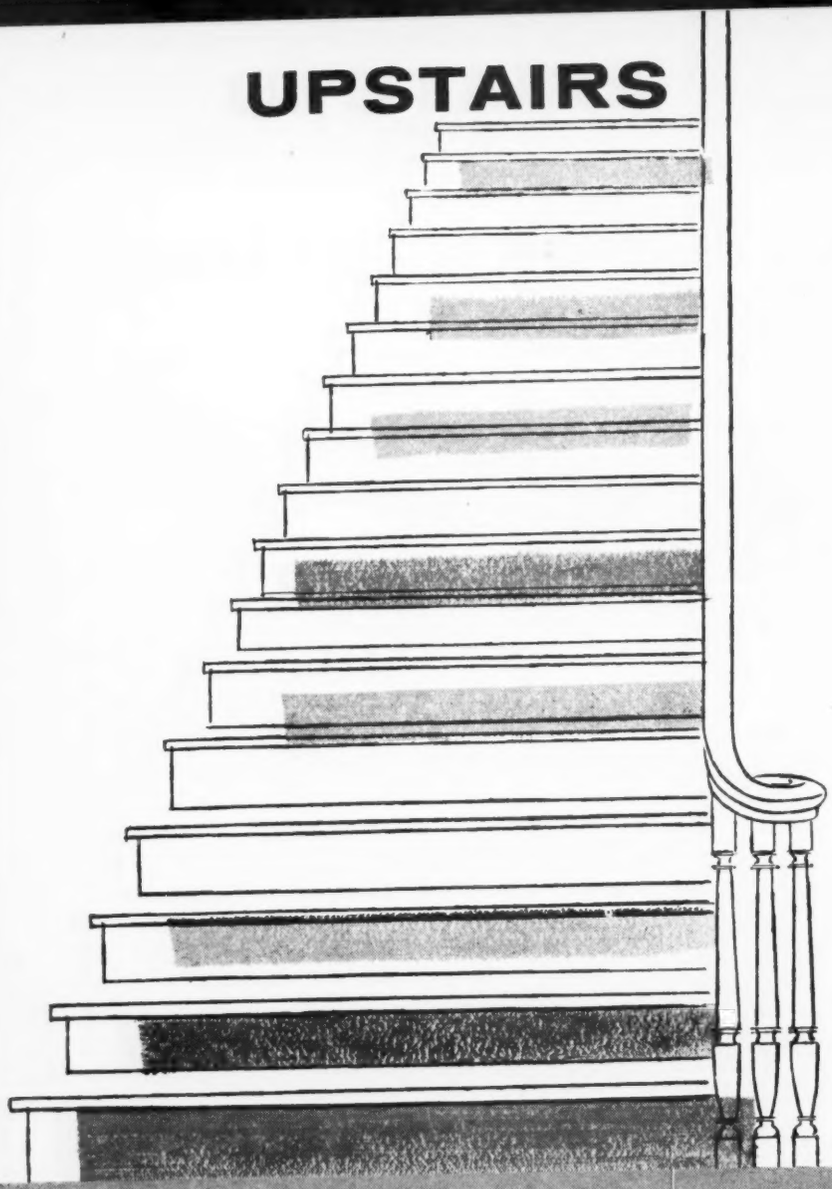


DOWNSTAIRS

All around the house, wherever people live, work and relax, telephones are welcome.

In the advertisement on the opposite page a young housewife tells why additional telephones are so helpful in her home. What she says will make sense to housewives everywhere.

This ad appears in full color in November and December issues of women's magazines that have upwards of 13,000,000 readers throughout the country. Such wide distribution means this ad should do a sales job for *all* of America's telephone companies.

"It's for you," says Mrs. Hesse. The kitchen telephone is easily reached from both work and dining areas.

"A bedroom telephone is indispensable," says Mrs. Hesse. The beige color set harmonizes with contemporary furnishings.

A phone in the den in the basement is a "must"—both laundry room and workshop are located close by.

The telephone in Johnny's room is portable—can be plugged into a jack in the living room as needed.

"Families today need several telephones"

says Mrs. Ernest Hesse, Cedar Circle Drive, Catonsville, Md.

Like most families the Ernest Hesses lead a busy life. Their beautiful modern home, their son John, their community activities keep them on the go.

"Probably no one in the family appreciates a telephone more than I," says Mrs. Hesse. "Having one close at hand saves me hundreds of steps and so much time. That's why we have telephones in the kitchen, the den, the master bedroom, and our son's room. It would be hard to manage without them.

"I do a lot of shopping by phone, visit with friends, often call the family long distance," she adds. "Convenient telephones seem as important to me as electricity. And the new color sets fit nicely into any room."

Additional telephones for your home cost little . . . just a few pennies a day. Your local telephone business office can give you all the details. Call them soon.

Bell Telephone System

ternational Radio Convention in Atlantic City in 1947.

"Note that International aspect of this allocation does not prevent member countries in the Western Hemisphere from making their own assignments, and still be consistent with International Regulations. The recent petitions, in Docket No. 11442 by industrial organizations to the FCC to be licensed in this band, are based on prior right by reason of the Atlantic City allocations and not on usage."

Referring to the REA plans for subscriber's automatic dial radio telephone service to bring telephone communication to a large segment of the nation's isolated rural population, also to include common carrier mobile communication for remote areas not presently served, Mr. McLean reported that REA has asked the FCC for rule changes to permit unattended use of radio stations necessary to the dial operation without the services of an operator and the usual logging of calls. A radio project to develop equipment that will work satisfactorily directly into dial telephone switching equipment is part of the plan.

"Under the heading of Carrier Coordination," he said, "there has been little activity of note during the year. The expected onrush of carrier systems to provide service for rural subscribers on frequencies not compatible with existing carrier systems has not materialized . . . ."

Commercial Conference Report

Lawson Presides at USITA Conference

KENNETH L. LAWSON, Lincoln, Neb., presided at the 1956 USITA Commercial Conference. The meeting, held in the Lower Tower Room of the Conrad Hilton during the recent USITA convention, featured addresses by: Mr. Lawson; F. Mark Clark, Rochester, N. Y.; L. M. Cleveland, Lincoln, Neb., and Carl D. Brorein, Jr., Tampa, Fla.

Better Commercial Performance Through Good Commercial-Traffic Relations

THE general traffic superintendent of the Lincoln (Neb.) Telephone & Telegraph Co., L. W. Cleveland, told the Commercial Conference that the introduction of the Traffic Department into Commercial sales performance has already been accomplished in varying degrees by some of those companies who have recently established merchandising programs.

"Traffic Department participation is a very necessary item in the successful operation of such plans," he said. "There are today many Independent companies as well as Bell Associated Companies who have had tremendous sales results by making use of the Traffic personnel and their availability to natural channels of communication which provide them with oportunities for sales.

"These natural channels of communication that I refer to are multipartite and the effectiveness with which they can be used is determined in a large sense by the amount of Commercial information that is available to the Traffic operators. One of these is the information board itself. An information operator in her day-to-day assignment has a wonderful opportunity to observe business and residential listing deficiencies. Recurring 'NF' or 'No Phone' reports as given by a Traffic information operator make her quickly aware of these deficiencies. If the Commercial Department will provide an easy method of reporting these situations and a satisfactory procedure of forwarding results to the individual operator, she will provide you with a veritable gold mine of high profit revenue by being alert to these sales possibilities. To the best of my information, there are few sales areas in our business where the ratio of sales to net profit are as good as in extra listings in the directory. Your information girls will provide you with plenty of sales prospects for this type of service as well as suggestions for display advertisements, alternate call listings, after hour listings and even main telephone service . . . ."

Emphasizing that long distance operators can be counted upon to provide the Commercial Department with more sales tips, Mr. Cleveland stated these tips might concern inadequate local exchange trunks, additional private exchange equipment and stations, as well as listing requirements.

"These contacts like those of information are brought about by her close contact with our calling customers in thousands of calls each day," he said.

Pointing out that the sales potential is not mere theory, Mr. Cleveland reported that in the case of Lincoln Tel. & Tel., of 5200 requests for sales assistance turned in by employes through the first nine months of the company's merchandising program, almost 1900 or more than 35 per cent of the requests were sent by employes from the Traffic Department.

"These 5200 requests resulted in an annual gross sales of $62,000 of which $14,000 was a result of the efforts of our Traffic girls," he said. "This 23 per cent of total annual revenue that was generated by Traffic might perhaps pall when compared to the 47 per cent as developed by the Plant forces. But the nature of sales generated by the Traffic Department is such as to indicate a rather high net earnings from their efforts . . . ."

Stating that the second general area where the Traffic Department can assist the Commercial people is in that of public relations, Mr. Cleveland emphasized that the "tremendous volume of daily contacts that our Traffic force, both local and long distance, have with our telephone users is perhaps just as critical as that of the Plant man."

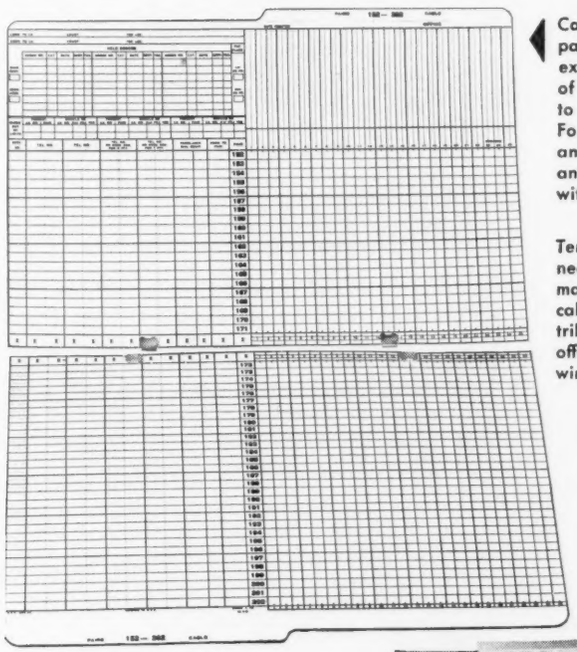
"Over a period of years the 'Tone of Service' that has been developed by the telephone operator has been an accepted standard among businessmen and housewives of good service and the reflection of willingness to serve," he said. "The Traffic operator is accepted by the public as a needed person, one that they, the public, can depend upon in times of emergency or indecision. This has not been a happenstance, but has been brought about through the diligent efforts of our predecessors in the industry who were inspired by a deep sense of dedication to service. This 'Tone of Service' has continued throughout the years but the problems of maintaining the same may not be as easy in the future as it has been in the past. Day by day we are introducing to our customers a more efficient, faster type of telephone service than the pioneers of the industry ever dreamed possible. In order to accomplish this, it has been necessary to inject the mechanical approach to telephone service to a point that in many of our exchanges

ACME VISIBLE

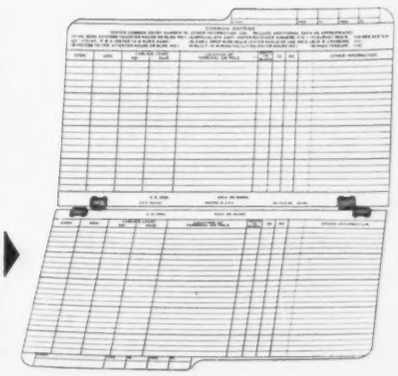
CABLE AND TERMINAL ASSIGNMENTS

Designed by experienced telephone personnel to accommodate all of the various conditions encountered in the preparation of terminal assignment, exchange subscriber cable, and related basic plant records, in accordance with approved system practices.

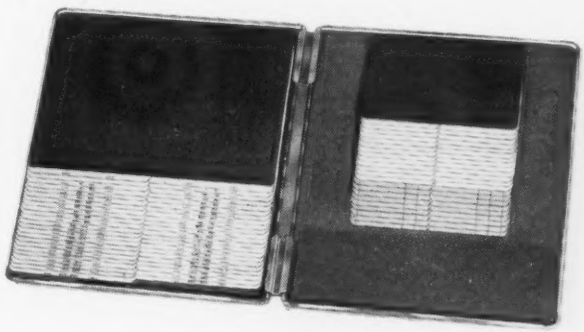
Simplifies and speeds the work of assignment. Adaptable for large, intermediate and small centers with the flexibility to meet the requirements for peak and normal work loads, varying number of cables, and other local conditions.



Cable assignment forms. With preprinted pair numbers, filed in numerical sequence, exposing a 51 pair complement. Cards are of special Acme Endurex rag content stock to permit repeated erasures and changes. Forms available for 50 terminal capacity and 8 party stations; 44 terminal capacity and 10 party stations; and for rural areas with more party lines.



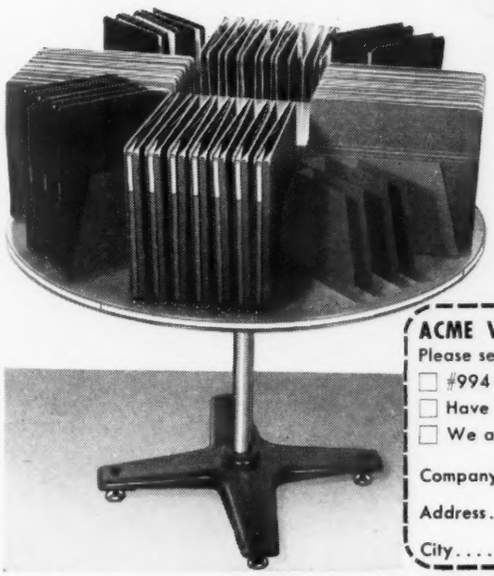
Terminal assignment forms. Eliminate the necessity of referring to supplementary maps to determine the correct distribution cable terminal. Forms available for distribution by (1) street, block or alley; (2) office building or apartment; (3) exchange wire.



Light weight metal-edged visible books for filing of cable cards on one side and terminal cards on the other, or for the same card on both sides of the book. Attractive gray Keratol binding.

Visible cabinets are available in a number of sizes. Each tray has a maximum of 102 forms or the equivalent of 5,100 cable pairs. Cabinets can be either stationary on stands or desks, or mounted on turntables.

Rotary equipment available in various sizes with and without push button motor. Books slide in and out without any lifting. They provide accessability to records at many points around circumference, and permit clerk to do a complete cable throw.



ACME VISIBLE RECORDS, INC.
CROZET, VIRGINIA

ACME VISIBLE RECORDS, INC., Telephone System Division, Crozet, Virginia S1156

Please send us illustrated booklet

☐ #994 on Acme Multi-Card Bulletin Holders ☐ #982 on Acme Flexoline for Telephone Companies

☐ Have representative call. Date..... Time.....

☐ We are interested in Acme Visible equipment for ..... records.
KIND OF RECORD

Company.....Attention.....

Address.....

City.....Zone.....State.....

most of the personal contacts will have vanished from the telephone users experience. If the mechanical approach to telephone service continues to grow it seems logical to conclude that tomorrow's telephone operator will bear more and more responsibility towards maintaining good public relations with our telephone subscribers . . . ."

Reporting on new practice changes that are being adopted by the various Associated Bell and Independent companies that will require better and closer Commercial-Traffic communication, Mr. Cleveland stated that most of these changes are being brought about by "equipment modification that will be contiguous with Direct Distance Dialing, so that when 3D comes to town it will be among friends."

"Recently," he said, "there have been 29 proposed changes to the operating practice. All of which are designed to advance this objective. Of these I should like to enumerate five that will perhaps have the largest Commercial impact in your day-to-day customer contacts.

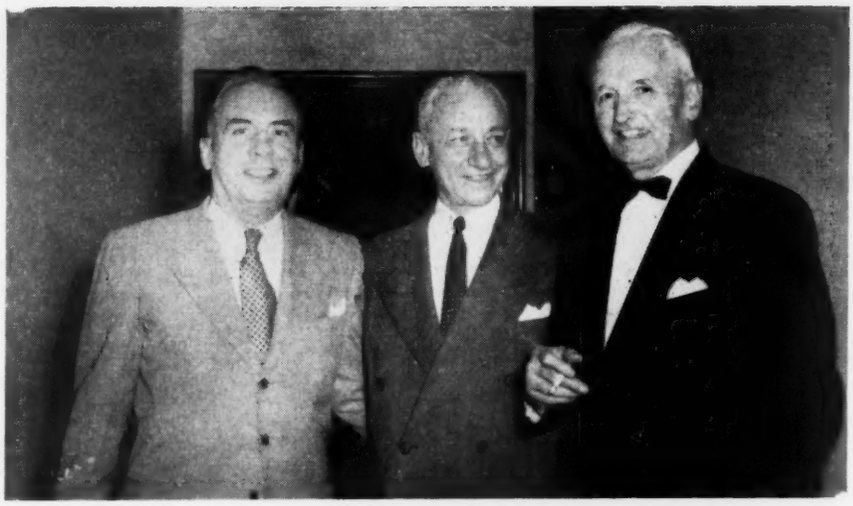
"*First*, the practices are being rewritten in such a manner so that the Outward operator encourages the calling party to remain on the line until the call is completed or the first report given. When this practice is put into effect it will not only save operator time but will save much toll line usage and will at the same time eliminate a source of irritation that we now have when long distance calls are advanced to the called party only to find that calling party has not only left the line but cannot be reached! The establishment of this idea will logically result in more completed calls but in the main will effect a much speedier overall long distance service to our users. You Commercial people will be required to explain this to your customers.

"*Second*, another change provides that the Outward operator will omit the name of the calling place in cases where calls are announced to the called telephones. Instead she will announce her call with 'Long Distance.' This will result in a simplified announcement procedure and eliminate a problem posed by present operator arrangements whereby Outward long distance traffic at some points is handled in other localities.

"*Third*, under another new practice, geared for quicker service, the Outward operator will accept routing directions volunteered by the customer if they appear to be complete and accurate. Also, new procedures involving the use of recorded announcements will help to space call attempts in case of serious circuit or machine overloads and thus reduce congestion. These procedures were tried out successfully last May in the handling of Mother's Day traffic.

"*Fourth*, provisions are also being made for eliminating, on the part of the operator, split connections thereby allowing our customers to stay on the line whereby they can assist more in advancing their own calls.

"*Fifth*, an effort will be made to secure the initial deposit on calls from coin telephones before taking up the circuit. This is an attempt to standardize a procedure which should be helpful in minimizing circuit holding time. On collect calls it will be no longer necessary to check the class of service at the distant information board if the operator knows the called telephone is not a coin. Also, where locally authorized, the checking will be omitted if the customer states that the called telephone is his home or office telephone or is not a coin telephone. I think that this will prove interesting to some of you who have had to answer toll complaints caused by the present practice."



USITA CONVENTIONERS (top l to r): RALPH H. BELLEZZI, ALEXANDER J. FALK, and EARL D. PITT, all from BSDA, Washington, D. C. (Bottom l to r): W. C. DILLON, Van Nuys, Calif., and O. R. ROACH, Mattoon, Ill.

The Control of Telephone Abuses

THE GENERAL Commercial Superintendent of the Rochester (N. Y.) Telephone Co., F. Mark Clark, explained to the Commercial

NUMBER 17
Toll grade. These insulators are employed for all exchange circuits and for all toll and trunk circuits that do not exceed ten miles.

Dependable ...in emergencies

Dependability is the story of Hemingray insulators. On the line, you can depend on their strength and uniform high quality . . . when you order, you can depend on prompt delivery of what you need, when you need it.

Since 1870, Hemingray insulators have been the standard for quality on telephone and telegraph lines the world over. Dependable Hemingray Glass insulators today carry most of the world's overhead telephone and telegraph lines . . . play a major part in helping to maintain our highly dependable communications systems. These insulators are a product of Kimble Glass Company, subsidiary of Owens-Illinois, Toledo 1, Ohio.

HEMINGRAY INSULATORS
AN (O) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES · TOLEDO 1, OHIO

Conference that the word "abuse" is generally used in the telephone business to describe situations caused by subscribers which — (1) Damage instruments or facilities; (2) increase maintenance or other expenses; (3) alter the scope of services, or (4) reduce revenues.

Discussing the control of abuses Mr. Clark warned, "we should be aware that the exercise of control carries with it certain responsibilities. Whenever we restrain a customer from an abusive act," he said, "we must be prepared to give the same treatment to all others who are found guilty of the same offense. If we fail in this, we can be accused of discriminating. Consequently, it appears that the mechanics of control must also provide the ways and means to give equal treatment to all offenders, in order that we shall neither abuse nor be abused."

Mr. Clark pointed out that abusive practices can be classified into two groups: (1) those which result from malicious intent, and (2) those which are caused by a failure in the administration of some phase of operations.

"We can protect ourselves against the abusive acts of persons who willfully smash equipment, stuff coin return chutes, use slugs at coin telephones, or evade responsibility for the payment of just charges, etc. through legal procedures," he said. "But, the control of those abuses that grow out of administrative failures depends upon the correction of the causes of such failures."

Reviewing the causes of administrative breakdowns and the means available for their correction, Mr. Clark stated that — "One and possibly the main cause is that management has failed many times to specify in writing the limitations of the various services it offers."

"As a consequence," he said, "customers have been invited to shape the scope of service offerings to fit their needs, and in the absence of adequate guidance from management, employes have cooperated with customers to extend the range of services to the point where the resulting situation was regarded as an abuse."

Describing ways and means of controlling abuses, Mr. Clark suggested that industry members regard every apparent abuse as a friend in disguise — "a friend that may be telling us, if we listen with an open mind,

K. L. LAWSON,
Chairman, Commercial Committee & Committee on Liaison with Private Communications Companies.

that our figurative slip is showing, and that somehow the abused service may be failing to satisfy our customers' needs."

"In other words," he said, "the occurrence of an abuse should stimulate us to do more than simply find a way to prevent its recurrence. Instead, it should challenge us to examine the abused service to see if it can be changed for the mutual benefit of our customers and ourselves, or if a new service would deter customers from the objectionable practices . . . ."

Commenting that "the easy way to correct abuses is to nip them in the bud by giving customers what they want and are willing to pay for." Mr. Clark emphasized that this method is not limited to the introduction of new services.

"For example," he said, "we may be spending more time and money to defeat some practice or charge than would be lost if we liberalized our offering and removed the invitation to abuse. Not many years ago the installation of jacks in homes was surrounded with many restrictions because it was felt that they reduced the demand for extension telephones.

"The administration of those regulations was a costly undertaking and not too effective. The latest idea is to permit them without restriction, and to the best of my knowledge, the demand for extensions has increased rather than decreased. In my state, I have never heard of the regulatory body objecting to a company taking a more liberal attitude with respect to its rates or the regulations governing its service offerings."

Referring to pricing or rating as tools for controlling abuse, Mr. Clark noted that the party line abuse problem is one of the areas where proper rating can simplify corrective action.

"Suppose," he said, "you have a heavy party line user who complains that he has difficulty getting the use of his line. You might persuade him to take a better grade of service and solve your problem if the differential between party and individual line rates does not present too much of a hurdle. If this idea appeals to you, take a look at your differentials when you make your next rate change. Changing the differential does not imply that the individual line rate should be reduced . . . ."

Stating that the last step in the control of abuses is to provide employes with adequate background and guidance which is always available to them, Mr. Clark reported that many companies have accomplished this first, by filing tariffs that, in addition to rate schedules, include general declarations of policy, together with inclusive and exclusive definitions of their various services. These definitions specify what the company proposes to do, and under what conditions it will do it, and what it expects from the user in the way of performance and cooperation.

"If you operate one of the smaller companies and you have not been able to furnish your employes with the sort of information just described," he said, "one reason may be that you have not had the time yourself and do not have anyone in your organization who can take on the assignment. If that is the case, part of the answer to your problem may be waiting for you — ready made."

"Two years ago your Commercial Committee recognized this problem and presented a model tariff for your consideration. It had been submitted to many state regulatory bodies for comments and criticism before it was presented here. Without exception, they approved it. It is a document that can be adapted to any company's needs with very minor modifications. If you are in favor of making your policies and practices a matter of record to safeguard against discrimination, and to give your employes a better knowledge of your business, I suggest you give serious consideration to the use of this model tariff.

"If you do adopt the model tariff, then you can easily amplify any aspect of your policies or practices by interleaving memorandums in ap-

Guard your splices right with these

REG. U. S. PAT. OFF.

SCOTCH Electrical Products!

BRAND

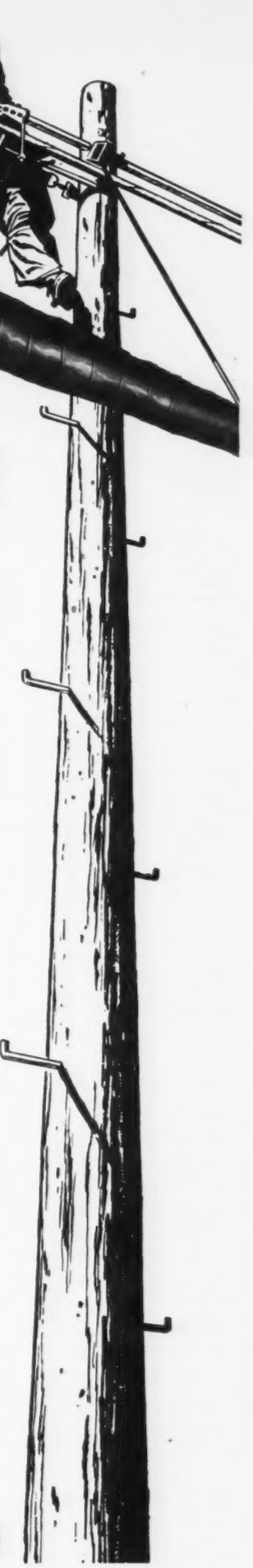
Approved for splicing plastic communications cable

"SCOTCH" Brand Plastic Tapes—the *original* plastic tapes. First developed and perfected in our own laboratories. Made to exacting quality standards. Tough, impervious vinyl plastic. Two thicknesses available: 7 mils (No. 33—the standard of all plastic tapes) and 10 mils (No. 22—for extra abrasion resistance).

"SCOTCH" Brand Aluminum Tape — has special adhesive to insure an effective moisture barrier. "SCOTCH" Electrical Tape No. 49 is available in 2 inch by 20 foot rolls.

"SCOTCHFIL" Electrical Insulating Putty —a putty in tape form. Application is clean, rapid, economical. Excellent as a fast build-up for cable splices. Long life, stays firm and flexible, doesn't dry out or become hard and brittle.

"SCOTCHCAST" in "Unipak" Container—casting resin and hardener in plastic double bag. Knead to break inner bag and mix hardener with plastic, then pour. Sets in a few minutes, provides a perfect moisture seal. Makes impervious moisture blocks in cable ends. Especially recommended for splicing lead sheathed cable to plastic sheathed cable.



Above products are approved for use in REA splicing procedures PC-2 and PC-3. Available at your wholesaler. Further information and copies of splicing procedures will be sent free on request. Write Dept. MI-116, Minnesota Mining and Manufacturing Co., St. Paul 6, Minn.

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3M COMPANY

propriate places to explain or clarify your intentions or the language of the tariff. A small company which has done this and makes copies of its tariff accessible to its employes will have everything the large company has in the way of adequate information and guidance for them . . . ."

Living Up To Your Advertising Program

EMPHASIZING that two basic advertising approaches can be made to the general public, Carl D. Brorein, Jr., Tampa, Fla., told the Commercial Conference — "One is to advertise the availability of service and to sell your subscribers or potential subscribers on the desirability of contracting for this service, and the other is to sell the company and those things for which it stands, not only to the subscribers but to the general public in the territory in which the company operates."

"Of the two basic forms of advertising that we are considering," he said, "both should be approached in a positive and 'live' manner and should briefly and simply convey to those people the program is attempting to reach the positive strides that the company has made in improving its service and, where appropriate, emphasizing the availability of additional service, such as supplementary equipment and many other revenue producers which the company may be in a position to supply . . . ."

"If you have a number of held orders from people who have been waiting for several weeks for basic service," he said, "it does not appear wise, when they have no service at all, to publicize a program of selling supplemental service while they continue to wait for just a telephone. Another consideration that would fall in this same field is the ability of the repair department to give prompt attention to the subscriber. In many cases this means clearing trouble reports, particularly where interruption of service is involved, at night time or on weekends just as promptly as during the normal working day."

Pointing out that if a company has facilities available that will enable it to conduct an extensive sales campaign, there is considerably more involved than just availability of equipment and the buying of advertising space, Mr. Brorein emphasized that when top management decides to embark upon such a program there will have been considerable thought and study on the part of this management as to the company's ability to provide the service.

"Equally important," he said, "is the coordination of the various departments that will be involved; such as Advertising, when it is a separate department, as they will be the ones that will bring public attention to the program; the Commercial Department, for they have direct contact with the subscriber and will probably be the group who does the basic survey work to determine the scope of the potential market; the Engineering Department, for they must plan the basic expansion resulting from such a sales program; the Plant Department, for they must not only install but maintain these additional pieces of equipment; the Purchasing Department, for they must have arranged for a continuous and steady flow of supplies."

"In fact," he added, "the whole organization becomes involved if the company is to uphold its end of a sales program by providing its facilities as advertised. Unless the organization is in a position to provide promptness of installation and adequate maintenance it might be better to direct your efforts and dollars to other phases of the public relations program."

Mr. Brorein stressed that if selling supplementary service is not contemplated, there is still a big job to be done.

"Selling the company," he said, "and those good things for which it stands, to your subscribers, in the long run probably requires considerably more effort and energy than does the selling of a particular service. In fact the word 'sell' should not even be used in this connection. The keystone of institutional good will and respect is courtesy. In addition, this phase requires that the conduct of the company and its employes in regards to their community activities be above reproach. As representatives of the company, they should create an atmosphere whereby the company is readily identified with the various business activities and civic affairs of the community.

"They should prove through their everyday actions that they are good business citizens who are interested in the welfare and betterment of each community in which the company operates. This is not only the responsibility of the top management but should go right on down the line and should be conducted in the name of the company and not in the name of a miscellaneous group of individuals . . . .

"If your company has, through years of effort, obtained that position where the communities look upon the company as an asset and the subscribers take a personal interest and a personal pride in the progress and development of the company, you have been, in the full sense of the word, living up to your advertising or public relations program, but once this position has been attained do not lose it by relaxing your efforts . . . ."

Canadian Independents Meet

James W. Thomson Elected President

IN THE BLANKET coverage available to the Canadian Independent Telephone Association which met in Toronto last month for its 51st annual convention, insurance can be collected for damage from a falling meteorite, according to Eric Hardy of Toronto.

In a discussion of blanket insurance approved by the board of governors of the association, Hardy described the hazards covered. These ranged from land-slide to sleet to impact of planes and falling meteors. As far as he knew, no claim had ever been made in Ontario for the latter.

At the annual meeting of the Canadian Independent Telephone Association, the members decided to press for a revision of toll compensation agreements written in 1951. They contended that increased costs had made those agreements unrealistic and that taking cases to the Board of Transport Commissioners in Ottawa was too costly a process.

There are 430 independent companies operating within Ontario — the largest being the Northern Telephone Co. in New Liskeard.

James W. Thomson of Buckingham, Que., was reelected president of

Independent Telephone Companies *dial* P-CRS*

• for prompt subscriber billing
• improved customer relations

*Punched-Card Records Services...

. . . the Remington Rand answer to the constantly rising costs of billing procedures.

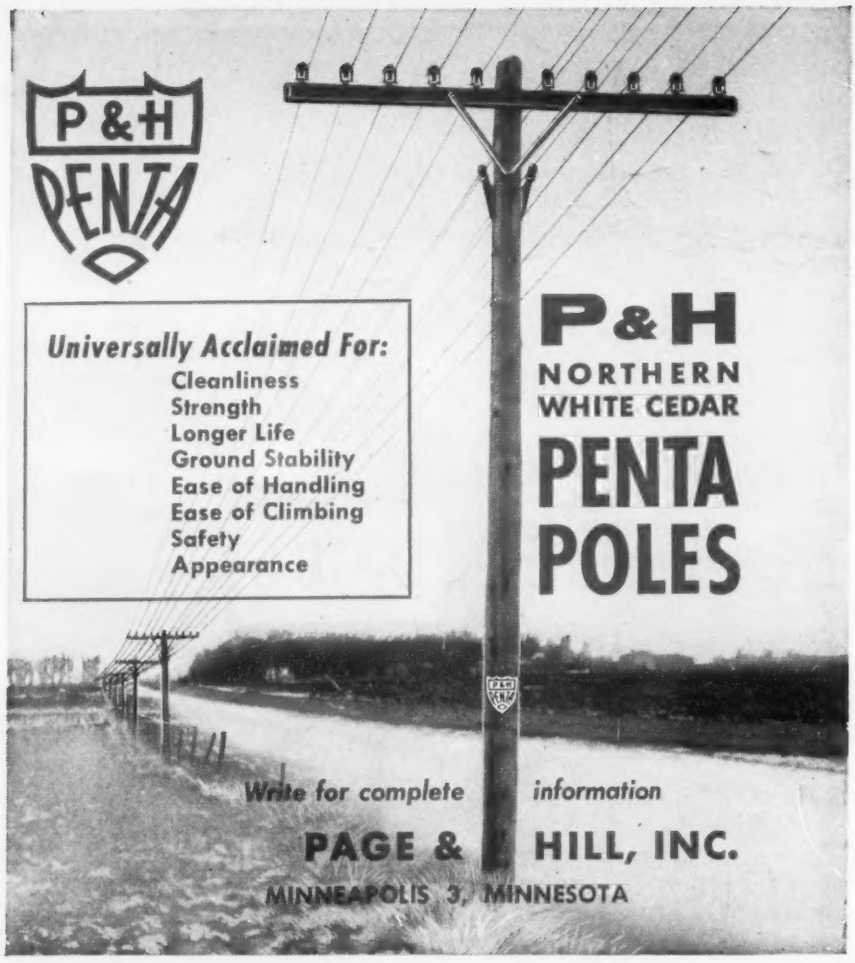
P-CRS handles monthly subscriber billing for independent telephone companies . . . prepares neat, accurate bills including completely itemized toll statements with speed and economy.

The procedure is simple . . . at billing time, merely forward list of new users and disconnects, toll tickets and miscellaneous charges . . . and Remington Rand does the rest. With high-speed punched-card equipment, bill and toll statements are computed and printed. The tabulated bills make a better appearance . . . are easy to read. A complete breakdown of charges eliminates customer misunderstandings. And the entire job is completed in a fraction of former time.

P-CRS is available to telephone companies throughout the United States. Larger companies may prefer to rent or purchase equipment for use in their own offices. In either case, the results are the same. Bills are *prepared* faster, are *mailed* faster, and are *paid* faster.

Learn how Central Virginia Telephone Corporation profited from this unique subscriber billing system. Write for free folder TM1084, Room 2157, 315 Fourth Avenue, New York 10, N. Y.

Remington Rand Univac
DIVISION OF SPERRY RAND CORPORATION



PROTECT YOUR END CELLS
ASSURE LONG LIFE AND
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Your end cells deserve the same careful, gentle treatment that a FLOTROL gives to your exchange battery. Be sure they get it by installing a FLOTROL End Cell Charger. Its cost is a small fraction of the cost of your installation, yet its maintenance of your end cells can be a deciding factor in maintaining service to your subscribers during a commercial power failure. Models available for two, three, and four cell batteries in current ratings from 3 amperes to 20 amperes. FLOTROL chargers for 12 volt engine starting batteries are also available in ratings from 3 amperes to 20 amperes.
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POWER EQUIPMENT FOR COMMUNICATIONS AND INDUSTRY

the Canadian Independent Telephone Association.

Others elected include:

Vice-President, Ross McEwing, Drayton, Ont.; Chairman of the Executive Committee, Don McKelvie, New Liskeard, Ont.; Treasurer, Thomas B. Rae, Stouffville, Ontario; Secretary, Guy W. Turner, Forest, Ont.; Board of Governments: Harold Schmidt, Baden, Ont., Carlton Dance, Aylmer, Ont.; Sheldon Davis, Eganville, Ont., and James Keenan of La Tuque, Quebec.

Hickory (N.C.) Tel. Co. to Merge With Central Tel. Co.

G. N. HUTTON, president of Hickory (N. C.) Telephone Co., announced last month that stockholders have agreed to approve merger of the company into Central Telephone Co. Hickory Telephone serves more than 16,000 stations in Hickory and nearby exchanges.

Central Telephone Co., of which Judson Large of Chicago is president, furnishes service to 29,000 telephone subscribers at 20 exchanges in North Carolina including the cities of Asheboro, Mount Airy, Elkin, North Wilkesboro and Leaksville. In addition, Central Telephone with 85,000 subscribers furnishes service in West Virginia, Iowa, Minnesota and North Dakota, and through its affiliated companies, Virginia Telephone & Telegraph Co., Middle States Telephone Co., of Ill., LaCrosse Telephone Corp., and Southeastern Telephone Co., serves 150,000 subscribers located in Virginia, Illinois, Wisconsin, Georgia and Florida.

Mr. Large has announced that upon completion of the merger, Mr. Hutton is to become a director of Central Telephone.

"Ankoseal" Exchange Cable Sets New High Standard

UNDER A PROGRAM which became effective October 1st, all Ankoseal 775-P cables normally rated as exchange cables are now being delivered "with electrical characteristics proved adaptable for use on the finest carrier systems in service."

Practical effect, according to Ansonia Wire & Cable Co., is to enable users of Ansonia exchange cable to "go to carrier" any time with assured freedom from noisy cable, excessive cross talk, and excessive circuit unbalance.

Frank G. La Prade Elected President

A RECORD ATTENDANCE of members and guests were on hand for the 25th annual convention of the North Carolina Independent Telephone Association held in Pinehurst on October 4-5.

During mornings and evenings the approximately 300 conventioners enjoyed entertainment or business sessions featuring prominent speakers who discussed subjects important to all phases of the telephone industry. For the ladies a tea and lecture on "Landscaping and Color in Your Garden" was held on the afternoon of the second convention day.

Speakers heard by members of the convention at the first day's business session were H. S. Crain of Durham, president of Crain and Denbo, Inc., engineering firm; Colonel W. T. Joyner of Raleigh, one of North Carolina's leading attorneys; and E. W. Carr from Greensboro, vice president and trust officer of Security National Bank.

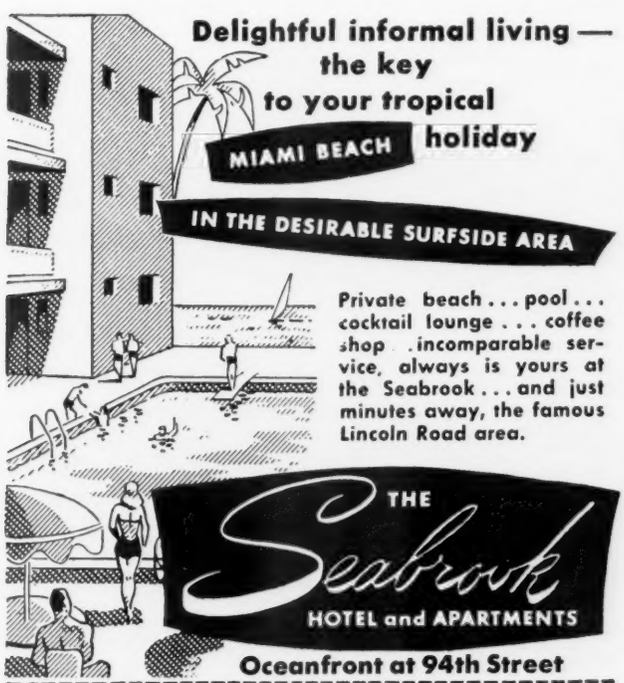
Citing professional lethargy, poor training in pre-college schooling, shortage of science teachers and various other causes for our present day engineer shortage, Mr. Crain proposed that the engineering profession work with schools and educators to help produce better engineers and make the engineering profession more attractive to young people. "The Soviet Union is definitely our foremost competitor in the world market today in that we must compete with Russia in the development of backward countries. In this development engineers will play a tremendous part in the future success of our country," Crain asserted.

Colonel Joyner began his talk to the convention by posing three questions: How on earth is it possible for a pure democracy to survive? How can public utilities expect to survive in a pure democracy? How is it possible to prevent chaos unless a single body has jurisdiction over public utilities and government operated utilities?

The noted lawyer expressed confidence in the continued progress of our form of democracy "despite the fact that no pure democracy has ever survived in past history." The continued survival of our form of government will require the exercise of great restraint on the part of government, corporate management and particularly on the part of the voters of this country, Colonel Joyner stated.

"It is probable that everyone here has recently heard that money is scarce, or that money is 'tight' in the market places of the United States," said banker E. W. Carr. "Why is it that business men, builders and manufacturers are finding they must pay more for money if they can get it at all?" he asked.

Mr. Carr stated that the answer is surprisingly simple. The American people have been and are spending more than they have been saving. It is simply that the demand for money has outstripped the supply. With this demand straining the available supply of money it is only natural that it should be loaned first to sound risks


Delightful informal living — the key to your tropical MIAMI BEACH holiday
IN THE DESIRABLE SURFSIDE AREA
Private beach . . . pool . . . cocktail lounge . . . coffee shop . incomparable service, always is yours at the Seabrook . . . and just minutes away, the famous Lincoln Road area.
THE Seabrook
HOTEL and APARTMENTS
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Please Mail Rates and Brochures to:

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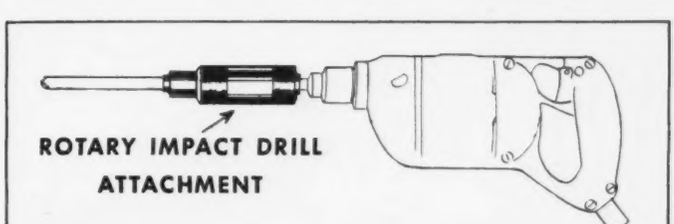
Drill a Hole in Concrete in 29 Seconds with a "HAMMERIN HANK" attached to any 1/4" electric drill.... Price $15.50



Uses ¼", ⅜", ½", ⅝", ¾" and ⅞" carboloy drills. You can get pneumatic action from an ordinary ¼" electric drill. "Hammerin' Hank," fits any ¼" electric drill chuck — Bore one inch holes in solid concrete in 29 seconds. Inner cam mechanism imparts a hammer-like impact every half revolution. No binding, no dust explosion — but a constantly changing "bite" on the material. As a result, very little pressure is required.

Price $15.50, slightly higher west of the Rockies.

Order from your distributor — or write

POWER TOOLS, Corp.

1427 Lakeside Avenue — Cleveland 14, Ohio

INDEPENDENT TELEPHONES

HELP YOU REACH ALL AMERICA

Chuckwagon 1956. The costume hasn't changed but the man and his ideas are thoroughly up to date. Cattle on the land, natural wealth under it, are turning the lone prairie into a wonderland of growth. Expanded telephone service is a big part of this picture of progress. More than 8.5 million Independent telephones provide an ever-growing network of service covering *two-thirds of the entire area of our nation.*

INDEPENDENT

INDEPENDENT TELEPHONE COMPANIES of America

United States Independent Telephone Association
Pennsylvania Building • Washington, D. C.

PART OF THE ENTHUSIASTIC North Carolina convention audience is shown here as some of the younger conventioners, a group from the Hines Telephone Co., applaud performers at the entertainment session of the convention. Mr. Hines, (extreme right) appears interested also. This is a small section of more than 350 people who enjoyed the entertainment.

that need it most and are therefore willing to pay the higher rates, he stated. "Expressed in another way," said Mr. Carr, "there is inflation in money rather than in goods because money has become scarce."

A President's Reception sponsored by the Association in honor of outgoing President L. S. Blades was held following the business session. The reception featured a cocktail hour and dancing.

At the second day business session the names of the following new directors were announced who will serve until October, 1959: W. S. Beddingfield, J. F. Havens, Mrs. J. D. Morris, Robbins Tilden and H. E. Hussey.

Directors of the Association who are still serving unexpired terms are: L. D. Coltrane, W. A. Carpenter, R. E. McKelvey, Frank LaPrade, L. D. Garibaldi, E. O. Freeman, John Cline, L. S. Blades, Jr., W. C. Harris and J. H. Snider.

At this second session, Personnel Consultant Dr. Raymond Katzell, vice president of Richardson, Bellows, Henry & Co., New York City, suggested that many American businesses can be likened to a modern cow house in so far as employe relations are concerned — "They are sanitary, shiny and sterile but the cows do not enjoy the milking," he said.

Physical needs such as air conditioning and comfortable offices do not entirely provide the human ingredient necessary for the best employer-employe relations, Katzell stated. Because the human needs of today's industrial employes are not fulfilled, they sometimes tend to "moneytize" their frustrations by demanding more concrete rewards in terms of money, which they understand, rather than in demands for psychological satisfaction which are their real needs.

Dr. Katzell concluded his talk on "Human Aspects in Personnel Relations" by pointing out various other needs vital to good employe relations in business and suggested various methods and techniques to meet these requirements to humanize today's modern business.

Final speaker of the convention, J. S. Stone of Charlotte, vice president and general manager of the Southern Bell Telephone & Telegraph Co., cited the importance of the Independents in the communications

OVER 6000 MURPHY CABLE TESTERS NOW IN USE

THE MURPHY ONE MAN CABLE TESTER

The New Model CMUW

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Tag & Terminating Board

NOW
A SPLICER ALONE
can identify non-working cable pairs three times faster than two men could heretofore.
DISTANCE
2 feet to 40 miles

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THE COMBINATION TAG— and TERMINATING BOARD
Showing the cable pairs properly connected.
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coming CONVENTIONS

FLORIDA: — Daytona Plaza Hotel, Daytona Beach, Nov. 19-20.

MINNESOTA: — Radisson Hotel, Minneapolis, Feb. 18-20, 1957.

LOUISIANA:—Captain Shreve Hotel, Shreveport, Feb. 27-28, 1957.

KENTUCKY: — Phoenix Hotel, Lexington, March 5, 1957.

TEXAS: Plaza Hotel, San Antonio, Mar. 11-12, 1957.

IOWA: Hotel Fort Des Moines, Des Moines, Apr. 2-3, 1957.

OHIO: — Deshler-Hilton Hotel, Columbus, April 16-17, 1957.

WISCONSIN: (Hotel Not Selected), May 15-16, 1957.

ILLINOIS: — Hotel Pere Marquette, Peoria, May 22-23, 1957.

MISSOURI: — Town House, Kansas City, Kans., May 27-28, 1957.

PENNSYLVANIA: — Buck Hill Falls Inn, Buck Hill Falls, June 4-5, 1957.

CALIFORNIA: — Ambassador Hotel, Los Angeles, June 5-6-7, 1957.

NEW YORK: — Scaroon Manor, Schroon Lake, June 17-19, 1957.

field, stating that the Independents serve about 80 per cent of the area of North Carolina.

In North Carolina, the number of telephones is now increasing more rapidly than the population, he stated. Toll business is on the increase and so are telephone company payrolls and money expended in telephone plant investment.

Mr. Stone praised the Independents for the way they have kept abreast of technical advances in telephony and cautioned them to install equipment compatible with direct distant dialing equipment of the future. He concluded his talk by presenting to the convention various charts which indicated the growth of rural telephones in North Carolina, advising the group of the definition of a farm as given by the U. S. Department of Agriculture.

At the convention banquet, held on the last evening of the convention, outgoing President L. S. Blades, Jr. reported the election of F. G. LaPrade of the Lee Telephone Company as the Association's new president to serve with Linn D. Garibaldi, W. A. Carpenter and John E. Cline as first, second and third vice presidents respectively. P. J. Long, of Carolina Telephone & Telegraph Co. was re-elected as secretary-treasurer of the association.

In his acceptance speech, incoming President LaPrade thanked the independents for the new honor they had bestowed on him and paid tribute to the various suppliers in attendance at the convention.

Following the banquet, the convention was treated to entertainment by "The Four Mints," a popular songs and rock and roll quartet described by many as the finest they had heard. "They should be on the Ed Sullivan Show," was the universal comment.—*P. J. Long, secretary-treasurer, North Carolina Independent Telephone Association.*

Citizens Utilities Buys Shasta Telephone Co.

CITIZENS UTILITIES CO., announced last month that its subsidiary, Citizens Utilities Co. of Calif. has acquired the business and property of the Shasta Telephone Co., Millville, Calif.

This is the sixth acquisition announced in 1956 by the nationwide, multi-service utility, which provides electric, gas, water and telephone service in Arizona, California, Colorado, Idaho, Illinois, Maine and Vermont.

Gilbert McQuate Purchases Lucas (Ohio) Telephone Co.

THE LUCAS (Ohio) Telephone Co., operating one exchange with approximately 380 stations, has been authorized by the Ohio Utilities Commission to sell its plant and assets to Gilbert McQuate for $35,000.

SHOWN AS THEY ENJOYED the North Carolina Independents' convention at the President's Reception are MRS. ROBERT CRATER, MRS. J. E. FITZGERALD, MISS MAMIE GREENWOOD, W. S. BEDDINGFIELD, MISS BUTLER NICHOLS, and MISS SALLY WEBB. All are representatives from Central Telephone Co.

PLOW STARTING IN SHOULDER of road near terminal stub. Buried plastic telephone wire, used in REA field test at Girard, Kans., is laid 24″ under surface of gravel road by special plow rig designed and built by Frank Horton & Co.

TRACTOR AND CABLE-LAYING PLOW leaving roadway to bring buried plastic telephone wire close to terminal stub pole at fence line.

Buried Wire Test

REA Starts Field Test at Girard, Kans.

LAST MONTH the REA reported plans for a field test of buried telephone wire, which the agency believes may be marketed and installed at a cost competitive with aerial wire for single circuit construction in many areas of the country. About 60% of the pole line mileage of REA borrowers is in single circuit leads.

Four types of plastic-coated wire have been "plowed under" as part of the system of the Craw-Kan Telephone Cooperative Association, Girard, Kans., an REA borrower. The wire for the test was manufactured specifically for REA by Plastic Wire & Cable Corp., Jewett City, Conn.

REA points out that buried plant, as an alternative to open wire construction, has "long been an attraction" to the telephone industry, but the cost of wire and installation has precluded its general use. In addition to saving the cost of poles and pole hardware, underground wire requires less maintenance and is not subject to storm damage.

Engineers from the REA will make evaluation tests from time to time and will exchange information with the borrower on a continuing basis to determine how resistant the wire samples are to rodents, insects, corrosion, and lightning. Burial is below the frost line for the area.

35,000 POUND CATERPILLAR TRACTOR hauls special cable-laying plow which is inserting new buried plastic telephone wire 24″ under the surface of the gravel road at a speed of about 3 miles an hour.

Ownership of the wire is being retained by REA, with the borrower in the test responsible for installation labor costs. Fifteen miles of wire used in the trial includes four types: (1) 2½ miles of 14-gauge copperweld, unarmored, identical to a new type of rural distribution wire used in aerial construction; (2) 2½ miles of 17-gauge hard-drawn copper, unarmored, but provided with an outer vinyl sheath; (3) five miles of 14-gauge copperweld, similar to the first type but provided with an outer vinyl sheath; and (4) five miles of 17-gauge hard-drawn copper, with a bronze tape shield and an outer vinyl sheath. Polyethylene is the primary insulation on wire used in the test.

FORD TRACTOR with trenching attachment digging 3″ wide trench 24″ deep from location of buried plastic telephone wire in roadbed to terminal stub pole at fenceline.

construction and maintenance DIGEST

- Swing and save
- Ringer wins for you
- Button, button
- Coiled in color
- Real cool sitting
- Anti-aging cable
- Direct burial saves cost
- Splice in a trice
- Block that bolt
- 25 years young

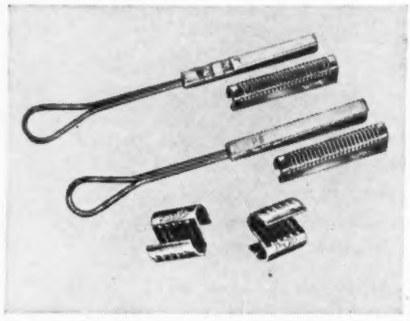
Published every month to help you get the most out of your materials and supplies dollar

by Earl A. Roesch, Office & Supply Manager—Rochester

Fishing is a great hobby—but it's poor business. I've noticed this over and over in my 29 years with Stromberg-Carlson. When it comes to selecting supplies and equipment, **smart** men in the telephone industry **don't** fish around. They order direct from Stromberg-Carlson and get the protection of a double guarantee—ours and the maker's. I've seen examples by the thousands of the careful attention paid to your supply needs. It's typical of the company that operates a full-time research program to bring **you** new and better telephone equipment. Your orders help us carry this program forward, faster. That's why we appreciate your business—and why we'll continue to show our thanks by giving you the best service we can.

Let drop wires swing free at support—they'll last longer

You prolong the life of drop wires when you use clamps that let the wire swing free at the support.



Type "PS" gives extra support for smaller wires. "D" clip is for snub attachments.

Such clamps are the Reliable Drop Wire Clamps offered by Stromberg-Carlson. These clamps give excellent support, eliminate sharp bends, and let you string and sag service drops before cutting wire.

Under load, they automatically tighten, assuring you a firm grip without damaging insulation of the wire.

FOUR TYPES are available:

Type "P"—for No. 17 or No. 18 AWG parallel.

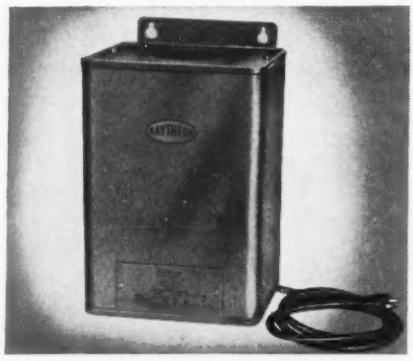
Type "PS"—for No. 17 or No. 18 AWG dumbbell wire and most other construction to No. 20.

Type "PR"—for No.'s 14-16 AWG twisted pair and parallel suitable also for No.'s 17-18 reinforced parallel neoprene-jacketed drop wire.

"D" Clip—Used to secure drop wire to itself for snub attachments.

How to get humless DC *and* 20-cycle ringing in one unit

In a case that's just barely big enough to carry a husky lineman's lunch, you can get plenty of power.



Both battery eliminator and 20-cycle ringer are combined in one small unit, providing 1 ampere, 24 volts.

We're talking about the Raytheon RectiRingeR, which measures only 7⅜" x 12¾" x 6". Here, in one compact little unit, you get **both** a battery eliminator and 20-cycle ringer.

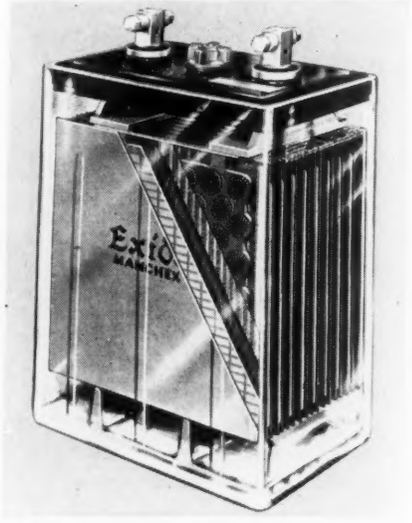
This unit includes the Recti-FilteR, the DC power source that has been proven by years of service for Independent telephone companies. It supplies humless, regulated DC power, with 20-cycle ringing power.

You'll find no moving parts in the RectiRingeR. So naturally, there's nothing to wear out.

Economical, silent in operation, the RectiRingeR is easy to install. And it has a special relay which **instantly** brings in "stand-by" power in the event of an AC failure.

Lead buttons mean lower costs

Only Exide Manchex Batteries have the positive plate with the buttons of corrugated lead tightly locked in the lead alloy grid several times more rigid than pure lead. Because of this outstanding design, the plates resist the mechanical strains bound to develop and retain their shape without growing or buckling. There is an ample reserve supply of pure lead which can be converted into active material as needed.



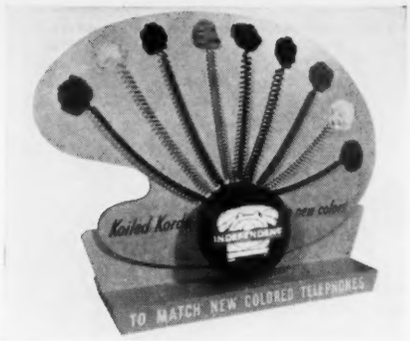
Special construction gives long life to Exide Manchex Batteries.

These and many other features combine to insure exceptionally long, trouble-free service.

Retractile cords now in black or color

There's extra revenue in Koiled Kords* retractile cords—the spring-like telephone cords that curl up neatly instead of dangling noose-like from the telephone.

Neoprene jacketed, they fit all types and makes of telephones, and



Available in black or color.

last indefinitely under severe service conditions. Extend to about 5 times their retracted length and return to their original neat coil when released.

*Koiled Kords is a trademark of Koiled Kords, Inc.

Cane-seat chair keeps operators cool, comfortable

Making the operator as comfortable as possible may not strike you as a "maintenance" problem — yet your service is much smoother when the girls are cool and relaxed.

This operator's chair has a cane seat, which is much cooler, cleaner and more comfortable than other types. It retains all the posture advantages for which Sturgis is famed. It is called the Sturgis SC-240.

The posture-curved, well-cushioned backrest is covered in genuine leather.

The exclusive Sturgis "Follow-Flex" feature automatically adjusts to the operator's every movement, supports her restfully all the time, discourages fatigue, keeps her at top efficiency.

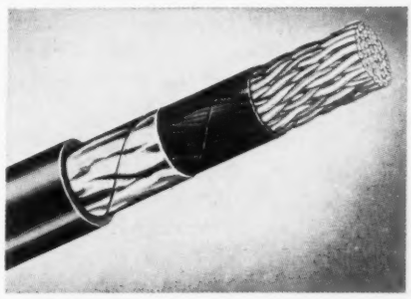
Cable has polyethylene sheath for extra-long life

In outside cable installations, you can side-step the ravages of weather, sunlight and temperature, saving yourself many dollars and hours in maintenance.

To do this, use the protection of the polyethylene sheath on Telecable®. Telecable exchange area cable for aerial and duct use has polyethylene insulation and polyethylene sheath. No other thermoplastic material has given as good assurance of aerial cable sheath life expectancy as has polyethylene.

Specially treated to resist sunlight, the Telecable sheath has maximum chemical resistance, is not subject to environmental cracking.

Extremely light in weight, tough, yet flexible, it resists the stresses encountered during installation. You can expect top performance of Telecable for upwards of 20 or 25 years.



Telecable exchange area cable has outstanding weather resistance and transmission qualities.

Direct burial cables save cost of underground ducts

Ansonia manufactures cables for direct, ductless burial, thoroughly armored to provide the mechanical protection you need for dependable telephone service.

Ankoseal Type 775-AP Direct Burial Cables offer you the added protection of two .013" aluminum alloy flat armor tapes, plus an overall jacket of Ankoseal plasticized PVC over the standard Type 775-P Cable. The armor tapes give additional shielding.

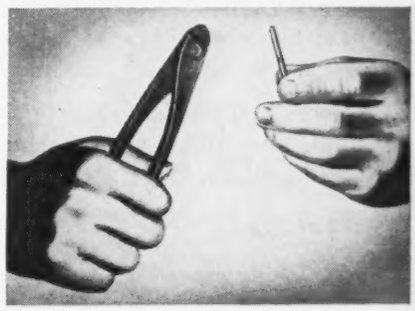
Layers of protection make Ankoseal Direct Burial Cable ideal for low-cost underground placement of outside cable plant.

With its flexibility and light weight, Ankoseal Direct Burial Cable permits quick placement in trenches or by means of cable plows with small crews.

Splice it fast . . . and it *stays* fast

Here's how to make a quick splice that holds fast, even under the most intense vibration. In fact, your splice will outlast the conductor!

You need two items; a Nicopress sleeve, and the Nicopress tool that is designed especially for use with these sleeves. You simply butt the



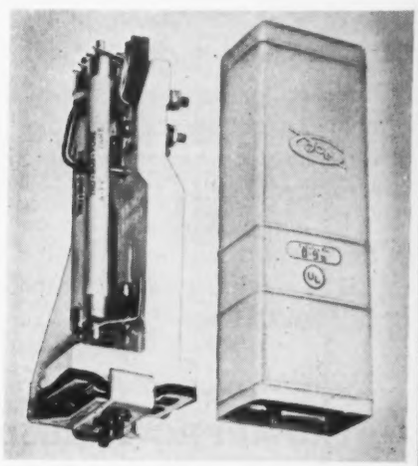
This Nicopress 17-2 tool plus this Nicopress sleeve make better pair splices, faster.

bared wire ends together inside the sleeve, and you've got a joint that won't ever pull out! Quick and easy.

The alloy lining inside the sleeve is harder than either the conductor or the sleeve, and forms a joint that is stronger than the rated breaking strength of the wire itself. **And** it has a high, lasting conductivity.

Protect telephones from lightning

No larger than a good-size candy bar is the Cook 09u telephone protector shown here. But it can save you a lot of grief and you can protect single circuits, both indoor and out.



Individual circuits are protected by small unit, measuring 6"x2½"x1¾".

(*Continued on Page* 84)

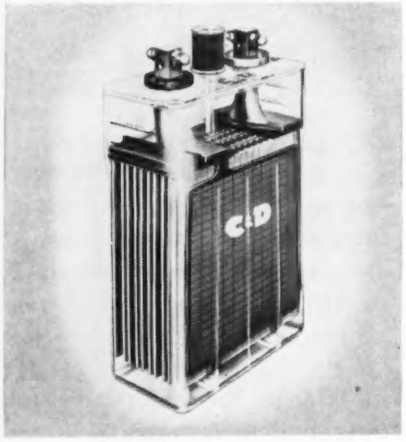
(*Continued from Page 83*)

construction and maintenance digest

The body is a single piece of heavy white glazed porcelain. Lightning arrestors are two Tru-Gap dischargers, two flat carbons mounted on a copper ground, and two A-9u 7-amp. lavite fuses. Neoprene gasket locks out insects, dust, snow, etc.

These two battery types give you decades of good service

Here's a dependable power supply for you with a life expectancy of **25 years!** It's the C & D Plasti-



This low-cost PlastiCell battery has life expectancy of 14 years. Its PlastiCal counterpart will last you 25 years.

Cal telephone battery, and when we say it will last 25 years, we're thinking about **full float service.**

You get this extra-long life because C & D PlastiCal (lead-calcium grids) batteries have an exclusive suspended and supported plate construction.

If a 14-year life expectancy will fill your needs, C & D has an economical battery for that, too. It's the PlastiCell battery, using high-tensile lead alloy grids.

In the picture, you see one of these PlastiCell batteries. It's the CE-11 and has a 300 A.H. capacity. In PlastiCal, specify PCE-300.

Distributed by

STROMBERG-CARLSON

A DIVISION OF GENERAL DYNAMICS CORPORATION

Sales Offices: Atlanta 3, Chicago 6, Kansas City 8, Rochester 3, San Francisco 3.

Safety Corner

Blind Panic Or Plan of Action? Difference Can Save Your Life!

HERE IS A test that could help save your life some day. In each of the following situations, your first reaction could mean life or death. How would you react?

(1) *You are in a crowded public place when someone screams, "Fire!"*

(2) *Your clothing suddenly catches fire!*

(3) *You wake up in the middle of the night and smell smoke!*

If you don't know what you'd do, that's bad. It means you would feel helpless — and according to the National Board of Fire Underwriters, *feeling helpless is the first step toward panic.*

Panic is a killer. Ironically, though it springs from a consuming desire to stay alive, it is very apt to destroy you. Time after time is has turned relatively minor emergencies into riots in which scores of people are suffocated or trampled to death.

Panic is contagious. It can spread in an instant from one hysterical person to a roomful, or a houseful, of people. The way to control it is to keep it from starting — by being prepared for emergencies.

(1) *In public places.* Whenever you enter a public place, make a mental note of the nearest exit and the quickest way to reach it.

Get-togethers in assembly halls often present such hazards as flammable decorations, insufficient exits, not enough aisle space, and folding chairs that tip over easily. If you have anything to do with such a gathering, try to eliminate these hazards. And instead of wondering, "How many can we get in?" think of "How many we can get out safely?"

(2) *If your clothes catch fire.* Fold your arms across your chest, drop to the floor or ground. If posible, roll up in a rug or heavy coat. Otherwise, roll over and over slowly to smother the flames.

(3) *In your home.* Prepare for a fire emergency now by figuring out alternate ways to reach the ground from every upstairs room. Every member of the family should be familiar with all these exits.

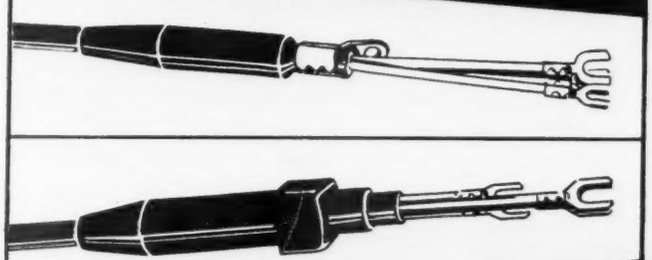
Family fire drills are a good idea. Try one in the middle of the night to see if everyone remembers what to do even when only half awake. Another time, pretend the main stairs are unsafe to use. This is valuable practice because it is often true in a real emergency.

Here's how you can tell:

Before you open your bedroom door, put the palm of your hand against it. If the door is hot, the outer hall is filled with deadly heated gases. If not, open the door a bit, turning your head away from the opening and bracing the door with your foot. Pass your hand across the opening. If the air is cool and there is no pressure, the hall should be safe.

A final reminder. If fire should cut off all escape routes from an upstairs room, don't jump out a window at once. You may hurt yourself needlessly. Open the window slightly and wait there for rescue. Breathe the fresh outside air. If it becomes necessary to jump, throw your mattress to land on.

When QUALITY and SERVICE are important



. . . look to COMMERCIAL for

Extra Length Cords
Retractable Handset Cords
Test Cords and
Special Cords for
Inter-Communication Systems
Switchboard Cord Cushions

. . . ALL MADE BETTER TO LAST LONGER . . . ALL READY FOR YOUR CALL! OUR COMPLETE REPAIR DEPARTMENT is AT YOUR SERVICE for quick action on re-butting switchboard cords and re-braiding old cotton switchboard cords with Nylon

- **Handset cords**
- **Deskset Cords**
- **Switchboard Cords with or without plugs**
- **Receiver Cords**
- **Transmitter Cords**
- **Patch Cords**

with tough, long-wearing NYLON, NEOPRENE or MERCERIZED COTTON JACKETS

Write, wire or phone.
Catalog, samples and prices on request.

COMMERCIAL CORD
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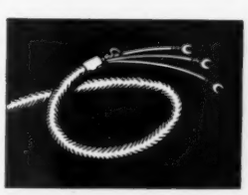
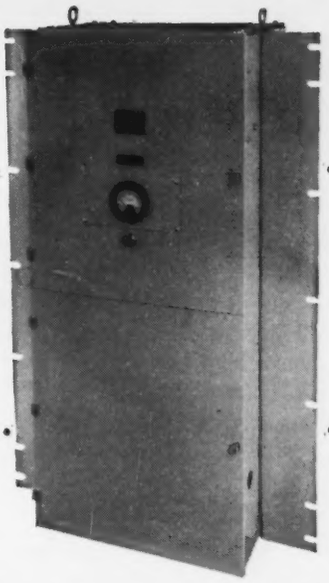
CLIFTON SPRINGS, N. Y.
Phone: Howard 2-5111



QUALITY CORDS FOR ALL MAKES AND TYPES OF TELEPHONE INSTRUMENTS

NEW



RAYTHEON 48 VOLT BATTERY CHARGERS
with these
3 IMPORTANT ADVANTAGES

1. ***Magnetic amplifier control*** **of both input and output with no-load to full-load stabilization. No tubes.**
2. ***No audible hum*** **at output terminals—Improved filtering of output circuit. Automatic compensation for rectifier aging.**
3. ***The most compact unit*** **on the market—Completely re-designed cabinet, for wall or rack mounting.**

RECTICHARGERS® NOW AVAILABLE for immediate delivery from stock. 6, 12 ampere (single-phase); 25, 50 ampere (3-phase)—48 volts. In stock by January 1957 —3, 25 ampere (single-phase); 100 ampere (3-phase); 6, 12, 24 ampere constant current models. *See your telephone supplier.*

Free! **A new folder describing the 48 volt line. Diagrams, specifications, other information you can use.**

MAIL THIS COUPON NOW

RAYTHEON MANUFACTURING CO.
Commercial Equipment Division,
Waltham 54, Mass.

RAYTHEON

Please send me 48 Volt Recticharger bulletin No. 4-300 —without charge or obligation.

Name_____

Company_____

Address_____

City_____ Zone____ State_____

Questions and ANSWERS

Conducted by Jay G. Mitchell

In this installment of his popular department Mr. Mitchell discusses —- (A) Plowing in telephone cable in town; (B) Loading of cable; and (C) the vacuum tube voltmeter.

QUESTION: — *The past year we put in considerable cable and in the future years it seems to indicate an increased need and desirability for more cable. We plan to bury most of our cable. Cable used is* 20 *and* 51*-pair double tape armored. We would like to know about the different types of cable plows that are available and the amount of power required to pull them. We plan to bury said cable to a depth of about* 2½ *feet. I might mention that our terrain is susceptible to this type of operation and our soil is a loam with a clay sub-soil. Rocks are encountered infrequently. We also have very few road right-of-ways that contain water year after year. We would like to have any details as to this type of operation especially its cost and its practicability.*

ANSWER: — The answer that it is possible to make to this very important plan must, of course, be very general. This company is very properly looking forward to the time when it will be confronted with demands for more service than its present facilities can handle. In the installation of a buried cable plant, provided any of the excellent types of cable now available are used, absolutely the most important part of the construction work is the making of a survey of the city streets and alleys, drawn to scale, with the route of each part of the cable shown and with the size and location of each cable terminal (determined by the demands for service) clearly indicated. Such a survey must be made before any equipment or material, such as cable, cable terminals and pole seats is purchased. This is because the kind of material to be used is determined in a properly constructed plant by the demands of present and probable future service at all points.

When the absolutely essential development study has been made and the maps have been checked consideration may be given to the purchase of the necessary equipment. If it is desired to use some type of plow for installing the underground portion of the cable it will then be most advisable to consult the advertising pages of TELEPHONE ENGINEER so that the entire preliminary cabling plan with an accurate map of the city showing all streets and alleys may be discussed with several of the manufacturers of the desired type of plowing equipment. To do otherwise would, in our opinion, risk purchasing the wrong type of equipment and possible disappointment when the ultimate cost is computed.

In our opinion the making of an accurate survey prior to placing orders for any of the equipment is not only most advisable but almost essential.

This inquiry is one of a number which, we regret, has not been properly answered earlier because of circumstances entirely beyond our control.

QUESTION: — *We are loading one of our local exchange cables and I would like some practical information on loading, would you please refer me to some book I could purchase on loading cable. I also have a question, would you please explain to me why on loaded local exchange cable all the subscribers on a loaded pair should be behind the last loading coil?*

ANSWER: — In answering the first part of this inquiry it is suggested that the telephone equipment manufacturers offer, in addition to their other lines, practically all types of loading coils and associated equipment. It is believed, therefore, that the writer of this inquiry will be able to acquire about all the information needed for the satisfactory loading of local exchange telephone circuits by writing to the companies that offer loading equipment. The names of such companies and their mail addresses will be disclosed in the advertising pages of "*TELEPHONE ENGINEER and MANAGEMENT*" and "*FORTNIGHTLY TELEPHONE ENGINEER.*" In addition to the free literature that may be secured as stated above it is believed that the discussion of loading coils and loading circuit problems as set out in the "Handbook for Telephone Managers and Engineers" by B. C. Burden should be read carefully. This work, in two volumes, may be ordered from Telephone Engineer Publishing Corp. and it is recommended as an addition to any telephone company's reference library.

This inquiry is one of a number which, we regret, could not be answered when received because of circumstances entirely beyond our control.

QUESTION:—*In a recent issue of Fortnightly Telephone Engineer there appeared a new table giving the corrective factors that can properly be applied to the readings of an alternating current voltmeter of the common portable type when connected across a constant load of* 600 *ohms impedance to determine the* impress-

ed *alternating current voltage in transmission tests. This table was published, as far as we can find out, for the first time. A previously published table of the corrective factors to be applied to alternating current voltmeters when connected across a load of* 500 *ohms was helpful but the new table is more directly applicable, of course, in* telephone *transmission studies. We were glad to have the later table published because of some current studies now in progress in connection with some of our circuits.*

Our testing equipment included an alternating current voltmeter which the manufacturer informed us has an internal impedance when adjusted for telephone transmission studies of about 5,000 *ohms. In order to enable our men to determine without any computation the impressed voltage when making transmission study tests we are considering the purchase of a Vacuum Tube Voltmeter.*

This, we are informed, will present a very high impedance and, when connected across a circuit with a connected load, will not require the application of a corrective factor in the reading. Will you please comment on this idea as we are uninformed as to the characteristics of this type of instrument except by hearsay? Stamped and directed envelope is enclosed.

ANSWER: It seems to be somewhat difficult to make a satisfactory reply to this very appropriate inquiry without a complete discussion of the theory and characteristics of the type of instrument which is properly designated as "The Vacuum Tube Voltmeter." If there appears to be sufficient general interest in the matter a discussion of this very valuable type of supersensitive laboratory equipment will be published. In general it is permissible to use an alternating current voltmeter of the conventional type in making preliminary routine transmission circuit tests provided that the correct interpretation of the *observed* readings is made by applying the corrective factor indicated for the impedance of the instrument. For this type of circuit study satisfactory and reliable instruments of the various conventional type, since they are self contained, portable and compact and are available in several price ranges, will be found to be satisfactory. In addition they are easily operated by everyone and require very little preliminary study and very simple adjustment. They are recommended for use in preliminary transmision studies such as must be assigned to maintenance personnel. They are not recommended for use in transmission evaluation of new circuits or switching equipment.

In answer to the specific inquiry of this telephone company it is the opinion of "*Question and Answers*" that the placing of an order for any one of the excellent types of Vacuum Tube Voltmeter be deferred until complete data may be obtained from the suppliers or manufacturers as to the characteristics, size, weight, requirement for external power supply, internal impedance (to both Direct Current and Alternating Current) ranges and availability of complete operating instructions.

The Vacuum Tube Voltmeter is a very valuable instrument and may be employed as the voltmeter in the most exacting and critical transmission studies. If the matter appears to have sufficiently wide attraction a detailed discussion of this equipment will be offered. For the small telephone company in routine investigations of unsatisfactory transmission a reliable type of conventional alternating current voltmeter of conventional design with satisfactory impedance to alternating telephone voice carrying current will be extremely helpful. Such an instrument will also be useful in a large number of routing tests and should be found in the testing equipment, in our opinion, of every wire chief.

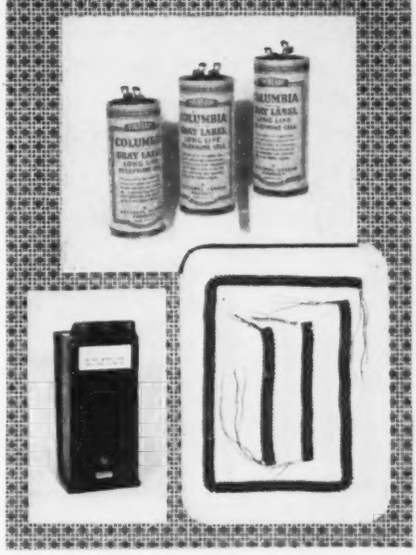
This inquiry is one of a number which, we regret, could not be answered promptly because of circumstances entirely beyond our control.—*Jay G. Mitchell.*

Farris Named Controller General Tel. Co. of Michigan

T. A. SAUNDERS, president of General Telephone Co. of Michigan, has announced the election by the board of directors of Charles G. Farris as controller of the company. Mr. Farris was formerly auditor and assistant secretary of Union Telephone Company, Owosso, Mich.

The new executive entered the telephone business on May 31, 1937 as secretary to the chief executive officer of Telephone Services, Inc., Kansas City, Mo.

You Can Always Rely on the Quality of Suttle Supplies



Gray Label Batteries

—— one of the oldest standbys in the telephone business —always the standard of highest quality—have been sold by Suttle as far back as we can remember.

Koiled Kords

—— one of the newest products in the telephone business that have proved their merit— a really worthwhile advance — are stocked in all sizes, up to and including the 25-foot extension cord.

Autelco Pay Stations

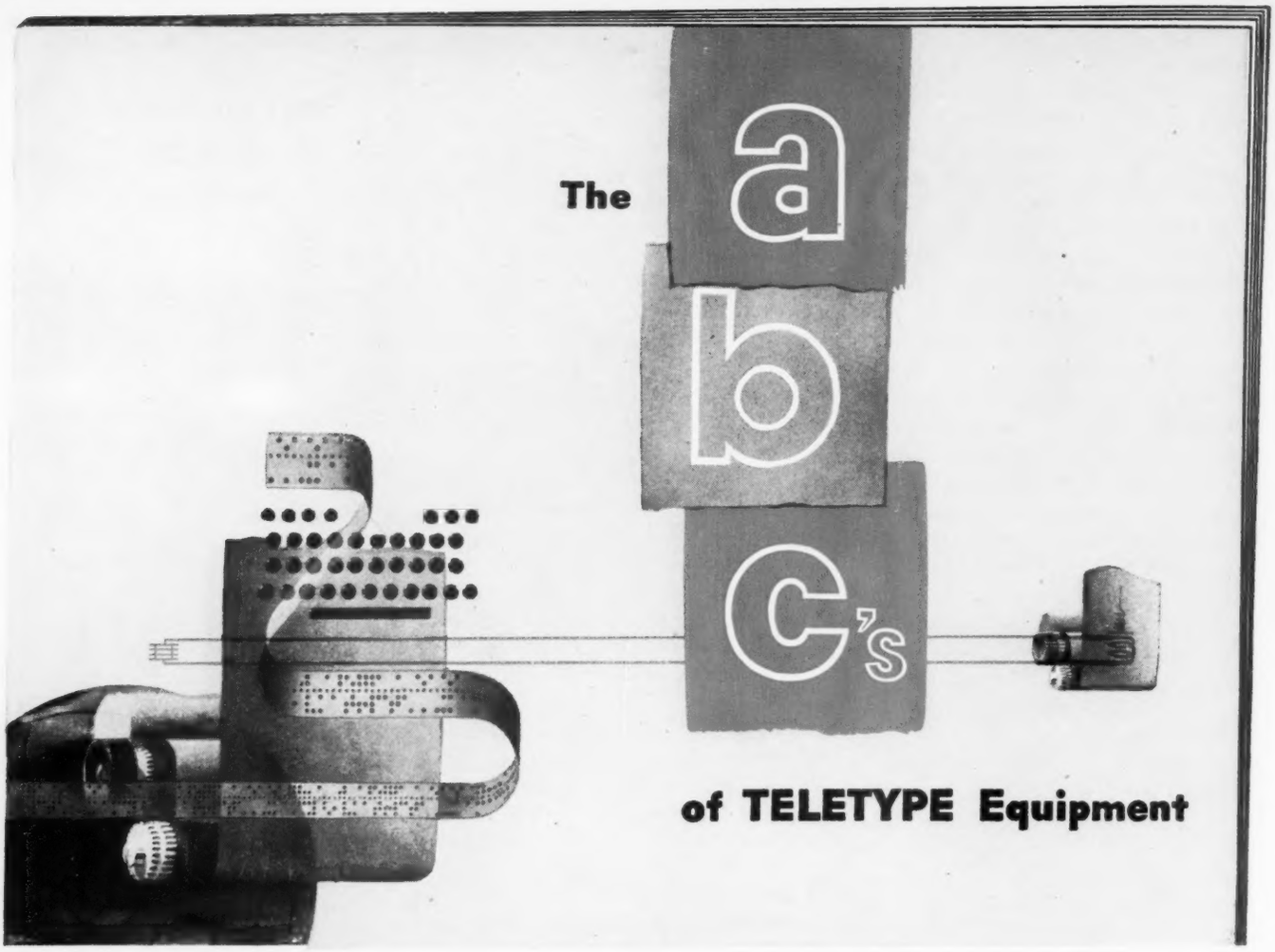
—— the continuation of the Gray pay station line — a revenue-producing necessity from away back — no substitutes — youll find all popular standard models in stock at Suttle.

See Your SUTTLE Catalog

Serving Independent Telephone Men Since 1910

Suttle EQUIPMENT CO.

LAWRENCEVILLE ILLINOIS



You can still get your free copy of "The ABC's of TELETYPE Equipment"

Because of the many requests we received last spring for *The ABC's of Teletype Equipment*, we're offering it again. If you missed getting your copy, mail the coupon below.

The booklet covers the operation and uses of Page Printers, Perforators, Reperforators, and Transmitter Distributors . . . explains the Baudot code and how code pulses are dispatched over a signal line . . . touches on relaying systems and integrated data processing . . . and cites some of the imaginative ways users apply Teletype apparatus to solve a variety of communication and other problems.

Written in nontechnical language, *The ABC's of Teletype Equipment* is a useful primer on printing telegraphy. If you would like additional copies to pass along to members of your staff, just indicate the number you wish on the coupon. There is no charge, of course.

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Chicago 39, Illinois

Gentlemen: Kindly send..... copies of "*The ABC's of TELETYPE Equipment.*"

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Company _____ **Title** _____

Address _____

City _____ **Zone** _____ **State** _____

THREE-POSITION switchboard for telephone answering service of Pomona Medical Exchange, Pomona, Calif., showing designation strips for customer's name and business, telephone number and answering terminal number, with "pigeon holes" for special information.

New Equipment

Concentrator-Identifier Equipment

NEW CONCENTRATOR-Identifier equipment designed to enable Independent telephone companies to supply facilities to telephone answering services in their area is being manufactured by Automatic Electric Co.

The new equipment is being produced in 100-line units, and will be compatible with Bell System equipment so that cross boundary service can be furnished, the company stated. It will be constructed to overcome the most common problems encountered by telephone companies in providing telephone answering facilities.

Surveys of the telephone answering field, made by the manufacturer, show that the practice of using individual cable pairs between the answering service and the telephone central office normally is satisfactory only if the two are close together. Even for medium sized installations, the mileage to the answering service may be too costly.

In the new equipment, only four cable pairs are required to serve 100 lines, resulting in a 96 percent reduction in copper wire, the announcement states. Also the possibility that the answering service may move to another location makes economical planning of cable layout by the telephone company difficult because of the large number of pairs involved. The problem is further aggravated, the company reports, by increased crowding in city areas which frequently makes suitable office space close to a telephone central office hard to find.

Two Major Units Involved

THE CONCENTRATOR-Identifier equipment, consists of two major units.

The first unit is the originating facility. This equipment is located in the telephone company's central office to provide identification and concentration of the customer's lines.

The second unit is the terminating facility, located in the office of the telephone answering service. This equipment receives pulse identification of a calling subscriber and identifies the line at the telephone answering switchboard.

The other element of equipment is a PBX board in the telephone answering service office, normally modified to provide large designation strips at each line, showing the subscriber's name and business, telephone number and answering terminal number. These frequently are augmented by ticket pockets, or pigeon holes, one for each subscriber, containing special information

Revenue Boosters

FROM TRASH TO CASH

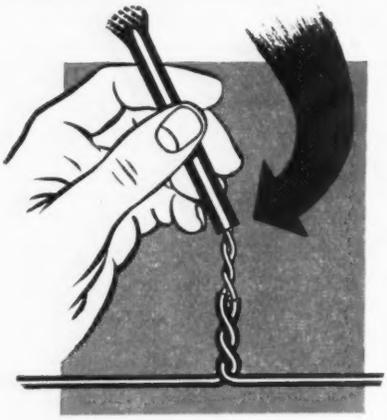
EVAN R. LAMAN, Denver, Colo., pay station salesman, recently came up with a lesson in how to turn empty space into a money making proposition. Reviewing the downtown area for likely looking spots for outdoor coin telephones, he noticed two vacant indented spaces at the front of the Elks Club Building. Filled with trash and old newspapers, they detracted from the appearance of the area.

Pedestrian and motor traffic pointed it up as an ideal location for one or more outdoor

telephone booths. The Elks heartily agreed with a proposal to install telephone booths on either side of the door. The unsightly recesses were soon filled by two attractive canopied booths. Laman's hunch proved right. The two telephone booths have averaged collections of over $40 each per month since installation.

Everyone benefits by the arrangement. For the Mountain States Tel. Co., the two booths mean a source of revenue. The Lodge, too, receives a commission for use of the space and their building has a neater appearance. In addition, the company was praised by the lodge for suggesting the change which provides two more convenient locations for 24-hour public telephone service. The booths mean goodwill, additional revenue, and customer convenience — and all because a salesman took advantage of an opportunity.

"Super-Splice"®
makes splices
waterproof
...from
inside out!



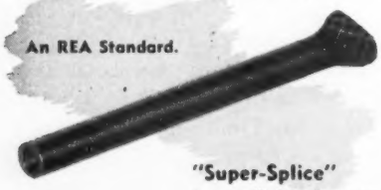
Superior Cable's exclusive economical "Super-Splice" is a plastic splice sleeve. It is sealed at one end and comes to you filled with an insulating and waterproofing compound.*

"Super-Splice" prevents leakage currents and breakdowns in the presence of moisture . . . good for 25,000 v. d. c.

Can be easily removed to reenter the splice . . . the compound never hardens or oozes out no matter what the temperature.

*A Dow-Corning silicone compound.

An REA Standard.



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that hangs from a shelf projecting out over the top of the switchboard. Different colored tickets may be used to denote different types of instruction.

At the telephone company central office, the originating unit is connected to the subscriber's lines by jumpers at the mainframe. When a calling party is connected to a subscriber's line, ringing on the line causes the originating information to select an idle trunk to the answering service switchboard, and transmit a series of coded pulses to the switchboard to light the signal lamp associated with the called line.

"Called Line" Scanning

WHEN AN operator at the telephone answering service plugs an answering cord into the jack associated with this lamp, a connection will be established to the calling subscriber. If the operator does not answer during the period that the line lamp is on, the equipment will release, and the connection and indication of the line will be reinstated on the next application of the ringing generator at the telephone central office to this subscriber's line.

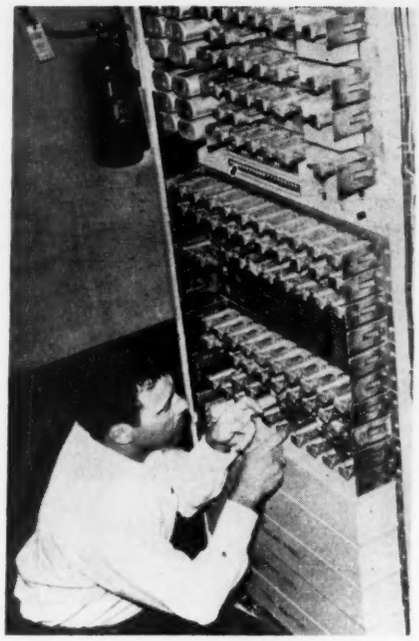
Should the telephone answering service operator plug in on the subscriber's jack during the time the lamp is dark, the talking path will not be completed until the line is again identified.

This "called-line" scanning feature has been made independent of talking path availability and, therefore, when all talking paths are busy, the equipment continues to cause line lamps associated with other incoming calls to flash. This gives the telephone answering service operator a choice in answering calls, and to answer only after a given number of indications as may be requested by the customer.

Although 100 lines is the maximum size of any one unit, additional units can be installed side by side if desirable for increased capacity. Where fewer than 100 lines are required, a small number of lines can be equipped initially; with additional lines added later in groups of ten until the ultimate capacity of 100 lines is reached.

Telephone Answering Is Growing Business

TELEPHONE answering and secretarial service has become a growing business, offering considerable opportunity for revenue to operating telephone companies.



ORIGINATING equipment located in the Chino central office of the Pomona, Cal. Telephone Exchange to provide identification and concentration of the customer's lines.

For example, Associated Telephone Exchanges, Inc., a leading association in this field, has 180 members. Most of these are in different cities, and a number in Independent telephone territory. It has been estimated by the association, that almost every city with 50,000 population or more will have at least one telephone answering service.

There are many different kinds of telephone answering service. A frequent user is the salesman who is not working out of a full-time office. While he is making his rounds, the answering service will intercept his calls, take his messages and, when the salesman calls in, advise him who called. In addition to serving manufacturer's agents and businesses, telephone answering services also take accident reports for insurance companies, relay messages for doctors, take out-of-order reports from vending machines, dispatch service men of all kinds, and so on.

The usual arrangement with a telephone answering subscriber is that his line will be answered after a stipulated number of rings indicates the subscriber is not going to answer. The subscriber may vary these instructions; during lunch periods and after hours, for example, the answer-

TERMINATING equipment in the office of the telephone answering service of the Pomona Medical Exchange, Pomona, Calif. This equipment receives pulse identification of a calling subscriber and identifies the line at the telephone answering switchboard.

ing service may be instructed to answer all calls on the first ring.

In addition to specialized equipment needs, telephone answering services have found that their success also depends upon giving highly personalized type of service. Many telephone answering service customers wish to create the impression that their calls are being answered in their own offices, and operators soon develop a high level of skill in this regard. They quickly become familiar with special instructions, and accept and handle calls without having to take time to refer to written instructions.

They also become highly proficient in handling heavy traffic. When an answering service board becomes busy, an operator may go in on one after another of the signalling lines on the board and say "just a moment please" thus letting the caller know that his call is being received and will be handled shortly. As soon as other calls are completed, the operator returns to each line, thanks the callers for waiting, and handles the calls in the usual manner.

Operators soon become able to keep a mental count of the number of times a given line has rung, while answering another line, or reaching for the unreported messages or special instructions in the line of ticket pockets hanging in front of her.

Safety Council Releases "Accident Facts" Booklet

THE 1956 EDITION of the National Safety Council's statistical yearbook, "Accident Facts," is now available. The booklet contains facts and figures on all types of accidents — industrial, traffic, home, farm and school.

Twenty pages of the book are devoted exclusively to occupational accidents and provide the factual background necessary to give direction to an industrial safety program. There is a detailed list of accident rates by major industry groups, as well as charts showing the accident trend during the past 30 years. Most common source of injuries, part of body most frequently injured, off-the-job accident problems, unsafe acts and unsafe conditions contributing to permanent impairments and deaths, and other topics are included.

The 96-page book is an invaluable source of ideas and data for making speeches, writing articles, preparing reports and planning safety campaigns.

"Accident Facts" is priced at $1.00 a single copy and less for quantities. Inquiries should be sent to the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

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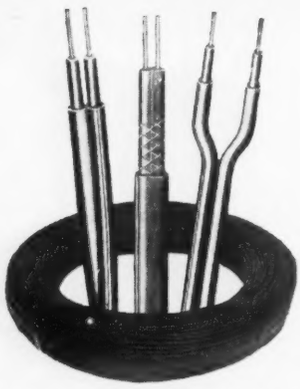

Long Service Life and Low Plant Costs go hand in hand with the installation of ENDURPRENE—The Neoprene Drop Wire available in both Copperweld and Bronze. This flexible and easy-to-handle wire is made by GENERAL INSULATED WIRE WORKS, INC.

Preformed Guy-Grips for Messenger or Guy Strand are the safest, surest method of dead-ending guy-wires and strands. Guy-Grips are quickly applied without tools. Installation savings range upwards to 50%. They can be applied either to the cut end or coiled end of the strand, permitting the strand to be cut to the proper length after application of the Guy-Grip. PREFORMED LINE PRODUCTS CO.

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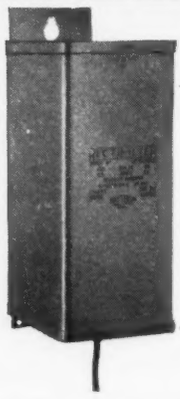

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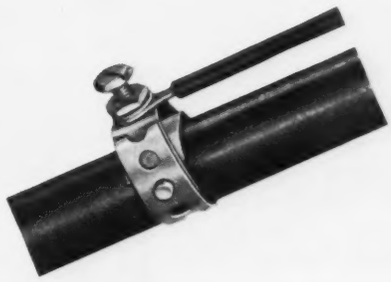
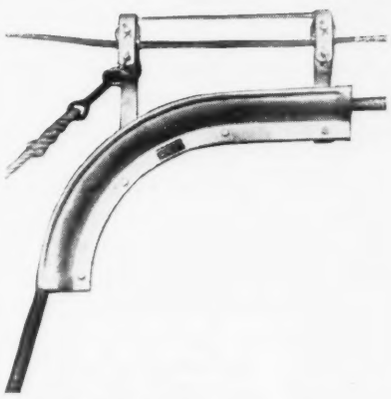
A GALLERY OF MASTERPIECES OF FINE LINE EQUIPMENT

Kellogg's Standard Outside Plant Handbook now available at special price while quantities last. Reduced to $2.75 a copy with ten or more copies priced at $2.50 each. Every phase of outside plant telephone pole line construction is covered in book.



Station Ground Clamps —for telephone, radio, and signal circuit station grounds, for ⅜" to 1¼" pipe. Constant high pressure contact for maximum conductivity. Made by the RELIABLE ELECTRIC COMPANY.



Cable Placing Shoe—used for guiding cable in raising the cable from the reel to the strand. Strong but light in weight—made of cast aluminum with steel arms and rollers. Locking pins keep shoe on strand. Made by CABLE SPINNING EQUIPMENT CO.

Corrosion-Resistant Crapo Stainless Steel Cable Lashing Wire, Type 430, is available in .045", .065" and .061" diameters. Crapo Galvanized (C Coated) Steel Cable Lashing Wire is available in .091" and .061" diameters. Made by INDIANA STEEL & WIRE CO., INC.

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General Machine Breaks Ground for Bansalem Plant

GROUND-BREAKING ceremonies on October 16 launched the construction of a new 60,000 square foot plant for General Machine Products Co. in Bansalem (Pa.) township. The plant will be devoted to the manufacture of special machinery for the electrical, electronic and telephone industries and precision industrial components.

The building is situated on an 8-acre tract to provide extensive parking and an outdoor recreation area for employes as well as to allow for future expansion. The factory area is entirely on one floor for straight-line production. Designed into the building are provisions for three additions which can be made at any required point in the future with a minimum of cost and time. The office area is on two floors (2500 sq. ft. each) with a storage area which can be converted into expanded office area when required.

Petrie Gets Laboratory Post At Automatic Electric

IN A MOVE TO further expand its laboratory and engineering services, Automatic Electric has appointed Joseph N. Petrie, who formerly headed its carrier and radio division, to the newly created post of chief transmission engineer.

In his new position, Mr. Petrie will be responsible for coordinating transmission work and developing standards for the laboratory, in addition to assisting operating telephone companies with transmission problems.

Mr. Petrie has had a wide and varied career in communications engineering. After graduating from the University of Denver in 1929, he went to work for the Mountain States Telephone & Telegraph Co. where he served in plant design and engineering, carrier engineering, the engineering of transposition patterns, and loading practices and transmission design for both local and toll plant.

In 1939, Mr. Petrie became telephone and telegraph engineer for the Union Pacific Railroad where he supervised the installation of communication lines for the Union Pacific System. In 1945, he joined Automatic Electric as a staff engineer, and in 1949 was made manager of the carrier and radio division.

EARL F. HOWLETT has been appointed manager of Telephone Carrier Sales for the Budelman Radio Corp., Stamford, Conn., manufacturers of telephone carrier and point-to-point communications equipment. Mr. Howlett was formerly transmission engineer for the Rural Electrification Administration and has been actively associated with the Independent telephone industry for the past 15 years.

Exide Purchases Fixed Assets Of Dibb Manufacturing Co.

LAST MONTH The Electric Storage Battery Co., Philadelphia, Pa., purchased the fixed assets of Dibb Manufacturing Co., Inc., 30-year-old metal stamping, forming and fabricating firm in Robbinsdale, Minn.

The Dibb assets will be absorbed into the company's Jordan Electric Products Division, Minneapolis, Minn., which Dibb supplied with sheet metal housings and other components for the battery testing equipment, battery chargers, emergency lighting units and other products it manufacturers.

Jordan Electric Products Division formerly was Jordan Electrical Manufacturing Co., a subsidiary of The Electric Storage Battery Co.

Copperweld Steel Wins Another "Oscar" Award

IN THE FINAL ratings by an independent board of judges in the 16th annual survey of "Financial World," national weekly magazine, Copperweld Steel Co. was judged as having the best annual report of the Small Steel companies. The bronze "Oscar of Industry" was presented to the company at the annual awards banquet in the grand ballroom of the Hotel Statler in New York on October 29. Two years ago Copperweld was awarded a similar "Oscar." Last year, the company was runner-up for top honors in its group.

A total of 5,000 annual reports

were entered this year in the international competition. Around 1,700 reports qualified for the final screening and these were judged in 100 industrial classifications for bronze trophies.

Weston Smith originator and director of the annual report surveys, presented the "Oscars of Industry" at the awards banquet, which attracted some 1,400 business and financial leaders from all over the United States, Canada and Latin America.

Ansonia Announces New Telephone Cable Literature

THE ANSONIA WIRE & CABLE CO., Ashton, Rhode Island, has just announced the publication of three new pieces of telephone cable literature.

W. G. Pearson, director of sales, reports that a completely revised Telephone Cable Splicing information booklet is now available. This third edition has been produced in pocket size for convenient use. Also just completed are complete revisions of Ansonia's brochures on aerial, duct, direct burial, toll quadded, inside wiring and B. U. G. telephone cables and on self supporting telephone cables and rural distribution wire.

Copies of any or all of these new publications are available on request. Address dept. TC, The Ansonia Wire & Cable Company. Ashton, Rhode Island.

Electronic Switching System Shown At National

A DEVELOPMENTAL model of an electronic switching system designed for use by Independent telephone companies was displayed at the U. S. Independent Telephone Association convention at the Conrad Hilton hotel, Chicago, October 15, 16 and 17 by Automatic Electric Co.

Although details of construction cannot be disclosed at the present time, company officials pointed out that the display model has been designed for adaptability to Independent telephone company use in smaller communities and rural areas where ease and economy in maintenance are important factors, as well as for use in large population areas.

The display model, capable of switching 10 telephone lines, is 10½ inches wide, 11 inches high and 7 inches deep. Transistors are used instead of vacuum tubes, printed circuits instead of conventional wiring and tone signaling replaces the usual ringing arrangement.

There are two significant benefits expected in electronic switching. One is speed. Electro-mechanical relays operate in a few thousandths of a second. Electronic switching should operate approximately one thousand times faster.

A second advantage is space. Because electronic switching equipment utilizes transistors, it will be highly compact, and telephone companies will be able to conserve on costly building space heretofore needed to house telephone central office equipment.

Company officials point out that the system is still in the experimental stage, and that in the present state of the art much development engineering remains to be accomplished.

Stromberg-Carlson Names Clark to New Sales Position

APPOINTMENT of Robert N. Clark as an additional sales representative serving telephone operating companies in the Northeast, has been announced by T. C. Thompson, general telecommunication sales manager of Stromberg-Carlson, a division of General Dynamics Corp.

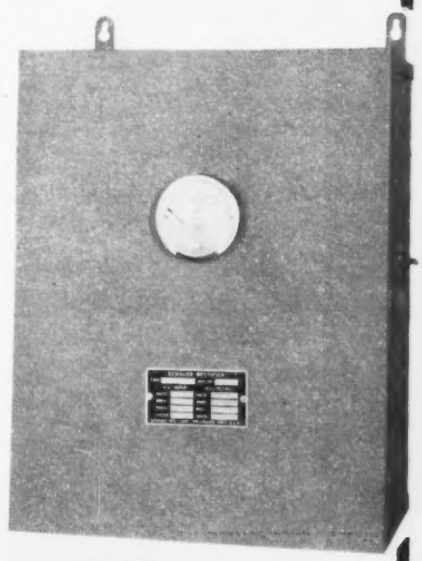
Mr. Clark will be sales representative in the New England States and

ROBERT N. CLARK

that portion of New York east of the Hudson River. In this capacity, he will report to Joseph S. Ottalagana, Rochester branch manager.

Robert Clark grew up in the village of Penfield, near Rochester, N. Y. After local schooling, he at-

for Years-
and Years-
and Years-
of Service!



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tended Manlius Academy, and went on to advanced work in electrical engineering at the University of Miami (Florida) and the University of Texas.

His experience at Stromberg-Carlson began in the Test Engineering Laboratory in April, 1953. A short time later he was made an instructor in the XY Training School. When Stromberg-Carlson entered the carrier manufacturing field, Mr. Clark was sent to the Dallas plant as a technical assistant. His most recent position at Stromberg-Carlson was that of a technical writer for the Telecommunication Advertising Department.

Mr. Clark saw military service with the U. S. Air Force as a research technician assigned to the School of Aviation Medicine and the Atomic Energy Commission.

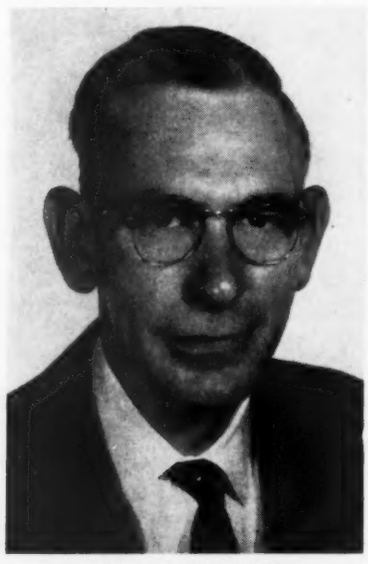
Mr. Clark will establish residence in Concord, N. H.

Cook Electric Advances Miller and Enright

THE ELECTION of two executives to newly created offices was announced last month by Walter C. Hasselhorn, president, Cook Electric Co.

William H. Miller was named vice president in charge of manufacturing and James E. Enright, assistant treasurer.

Mr. Miller, a veteran of 21 years in plant administration, has been Chicago plant manager of Cook for the last year. Previously, for 20 years, he was associated with Houdaille Hershey, Inc., Decatur, Ill., automotive components manufacturer. He was general foreman from 1940 to 1945, rising to plant superintendent in 1945 and to factory manager in 1950.



JAMES E. ENRIGHT

WILLIAM H. MILLER

Mr. Enright, before his election to the new office of assistant treasurer, served as assistant to the treasurer for the company, a position he had filled since 1950. He joined Cook Electric Co. in 1944 as general accountant. Earlier, he was associated for 11 years with the customer service department of The Peoples Gas Light & Coke Co., Chicago.

Koiled Kords Announces Changes In Sales Staff

LAST MONTH E. L. Love, vice president in charge of sales, Koiled Kords, Inc., announced two changes in the company's sales staff.

Loomis Lincoln who has been handling industrial sales of Koiled Kords retractile cords from the home office in New Haven, Conn., has been transferred to Chicago to become district manager covering the Central States. In his new capacity Mr. Lincoln also will handle retractile communications cords and other products handled by the Koiled Kords organization. His office will be with Reliable Electric Co., 3145 Carroll Ave., Chicago 12, Ill.

Mr. Lincoln, a graduate of Williams College, spent some time in the Army Air Force as a fighter pilot and was employed by the Southern New England Telephone Co. and by the Dictaphone Corp. before joining Koiled Kords in 1952.

Replacing Mr. Lincoln in the home office, is William Bloomquist who has spent four years in the Whitney Blake Co. laboratory on research, development and design of retractile

cords. Mr. Bloomquist is a graduate of Quinnipiac College and of Upsala College from which later he earned B. S. and B. B. A. degrees.

Prior to joining Koiled Kords, Inc. in 1952 Mr. Bloomquist had been employed by American Machine & Foundry Co., Buffalo, N. Y. and by American Steel & Wire Co., New Haven, Conn.

New Research Appointments At Automatic Electric Co.

AS PART of its expanding research and development activities, several top-level changes and promotions have been announced in the Automatic Electric laboratories organization.

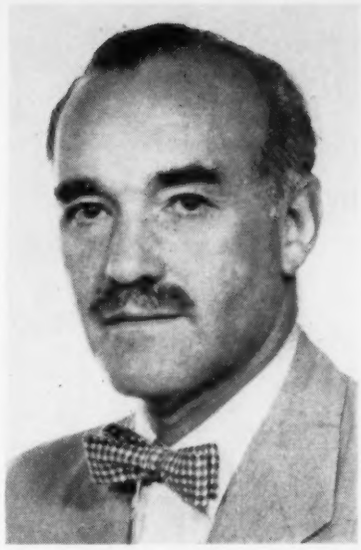
C. W. Frank, formerly executive assistant to the vice president in charge of Research and Engineering, has been named director of Facilities and Planning. He will be responsible for programming, scheduling and coordination of laboratory activities and facilities requirements.

C. F. Ffolliott, who has been head of the product design section, be-

C. W. FRANK

comes director of Apparatus and Product Design Development. In this new position he will be responsible for the development of all telephone station apparatus, power, signaling and transmission equipment, design of relays and switches and recording apparatus, and will direct all mechanical and environmental testing.

Dr. Imre Molnar, senior project engineer, has been appointed to the newly created post of director of Telephone Switching Systems Development, and will be responsible



C. F. FFOLLIOTT

for the development of all telephone local central office switching equipment, automatic toll ticketing systems (SATT), toll switchboards and toll switching systems, and dial private branch exchange equipment (PABX).

A fourth major division of laboratory activities will be headed by Dr. A. E. Woodruff, who will continue as director of Analytical Research. He will be responsible for electronic switching development, semi-conductor research, electronics research and non-linear component development as well as basic circuit research and relay and switch development.

Each of the four has had a long and varied career in communications research and engineering.

Mr. Frank joined Automatic Electric in 1934 after extensive engineering experience with General Electric Co., RCA-Victor, and Sylvania Electric Products Corp. He has held a succession of technical and administrative positions in the Automatic Electric laboratory and engineering organizations since that time. Mr. Frank is a native of Lawrence, Mass. He received his degrees of bachelor of science and master of science in electrical engineering at Massachusetts Institute of Technology, and is a member of the American Institute of Electrical Engineers, (AIEE) and the Institute of Radio Engineers, (IRE). He is a registered professional engineer in Illinois.

Mr. Ffolliott, who came originally from New Westminster, British Columbia, received his electrical engineering and master of science degrees at Rensselaer Polythechnic

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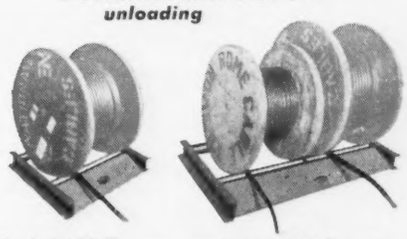

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DR. IMRE MOLNAR

ers College at Emporia, and his master of science and PhD degrees Institute, followed by three years study at Harvard University. He taught at both Harvard and Rensselaer, worked for the New York Edison Co., and then joined Automatic Electric in 1934 where he has concentrated on design and developmental engineering. Mr. Ffolliott is a Fellow of the American Institute of Electrical Engineers, (AIEE) and a registered professional engineer in New York and Illinois.

Dr. Molnar began his telephone career in 1921 as an apprentice and installer in Europe. He received his degree in Communication Engineering at the University and Institute of Technology of Berlin, Germany in 1930. He later attended the University of Liverpool, England, and studied chemistry at the Illinois Institute of Technology in Chicago. He received his PhD in Electrical Engineering and Statistics in 1950 from the Northwestern University, Evanston, Ill. Dr. Molnar first began work with the Automatic Electric group in 1930 in Europe. He transferred to this country in 1937, became a project engineer in 1943 and senior project engineer in charge of toll system development in 1954. He is a senior member of the Institute of Radio Engineers (IRE), member of the American Institute of Electrical Engineers (AIEE), member of Sigma Xi, and a registered professional engineer in Illinois.

Dr. Woodruff was reared in Cloud City, Kansas near the town of Miltonvale. He received his bachelor of science degree at Kansas State Teach-

at the University of Chicago. He served with the Army Signal Corps during World War I. Dr. Woodruff was professor of Physics and head of the Physics Department at Northern Normal and Industrial School, Aberdeen, N. D., and at Butler University, Indianapolis, in the period between World War I and 1925 when he joined Automatic Electric as a re-

DR. A. E. WOODRUFF

search physicist. He was placed in charge of Analytical Research in 1947.

Dr. Woodruff is a member of the American Institute of Physics, American Physical Society, Institute of Radio Engineers, (IRE), Acoustical Society of America, American Association for the Advancement of Science, Indiana Academy of Science, Western Society of Engineers, and the U. S. Naval Institute.

Automatic Electric Announces New Type Loading Coils

A NEW SERIES of loading coils, manufactured by Automatic Electric Co., utilizes a molybdenum-permalloy core and the coil mounting space has been reduced in size from 3½ by 1½ inches to 1¼ by ¾ inches.

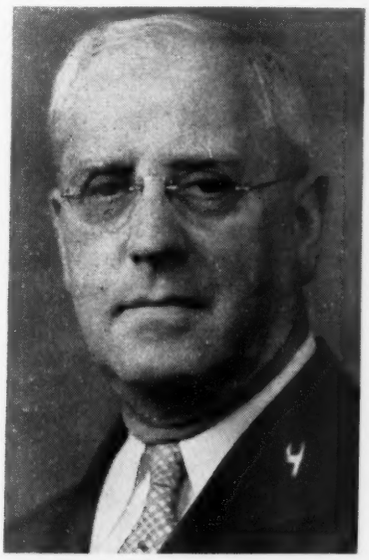
The new coils are neither taped nor impregnated. To provide moisture proofing they are placed in gas-tight steel cases. The cases are alternately evacuated and recharged with dry nitrogen gas to remove all traces of moisture. They are then finally charged with dry nitrogen gas and sealed for storing and shipping.

The coils have two balanced wind-

ings on each core, one winding connected in each conductor of a cable pair. By reducing attenuation of the cable pairs, these loading coils permit transmitting voice currents over longer lines or using smaller conductors. These coils are normally placed at 6000-foot intervals in transmission cable and spliced into the cable, one coil to each cable pair. They are primarily intended for loading non-quadded exchange area cable.

The new loading coil is interchangeable with Western Electric models 91 and 124.

Basic assemblies of five coils are made in sheet iron cans, which serve not only as mechanical retainers, but also as magnetic shields, the company reports. These are then assembled in steel containers in groups of five to 455 coils, the number depending upon customer requirements.



FRIENDS of Col. GUSTAV HIRSCH, veteran telephone industry member and president of Gustav Hirsch Organization, Inc., Columbus, honored Colonel Hirsch with a party marking his 80th birthday. Held at the Siota Country Club, Columbus, O., November 2, with George Jessel as Master of Ceremonies, the party was attended by: L. M. Berry, Dayton, Ohio; E. F. Bigert, Columbus; Ray Blain, Washington, D. C.; Ben Cravens, Jamestown, N. Y.; R. D. Henderson; Col. Parker Hitt, Front Royal, Va.; Col. W. C. Henry, Bellevue, Ohio; John Jaap, Chicago; Hans Kraepelien, Galion, Ohio; J. D. Park, Canton, Ohio; Donald C. Power, New York City; George Quatman, Lima, Ohio; K. B. Schotte, Kittanning, Pa.; T. C. Thompson, Rochester, N. Y.; L. L. Ruggles, Chicago; R. Waltz, Delta, Ohio; Clare Williams, Portsmouth, Ohio; and Lloyd Wright, Hendersonville, N. C.

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1. The names and addresses of the publisher, editor, managing editor and business managers are:

Publisher—Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago, Ill.

Editor—Ray W. Smith, 7720 Sheridan Road, Chicago, Ill.

Managing Editor—John G. Reynolds, 7720 Sheridan Road, Chicago, Ill.

Business Managers, Ray W. & Roy F. Smith, 7720 Sheridan Road, Chicago, Ill.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

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3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: **(If there are none, so state.)**

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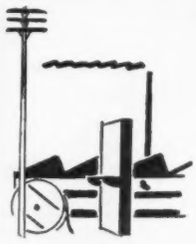
Sworn to and subscribed before me this 13th day of September, 1956.

Ray W. Smith, Editor

Helen G. McCorkle, Notary Public

(My commission expires July 5, 1959)



THE BUYERS' GUIDE and NEW PRODUCTS' SHOWCASE

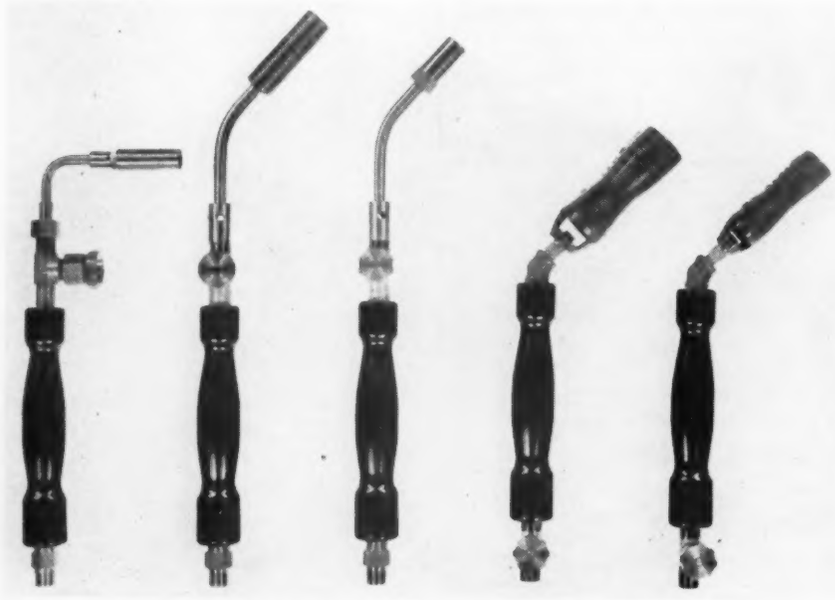
To obtain complete data on products and services described in the departments please fill out and mail the Reader's Service order blank shown on the opposite page.

L-P Gas Torches

LP-GAS TORCHES manufactured by Mutual Liquid Gas Equipment Co., Gardena, Calif., are now being produced with plastic handles. According to the manufacturer the plastic is made of a high impact material that will withstand terrific heat and will not chip. They will take a great deal of abuse in the field without losing original finish.

The five small blow torches, illustrated, offer mechanics a selection from super-pointed flame, used in fine work such as electrical soldering, to heavy blast-type flame, used in burning-out joints, pre-heating, etc.

The new plastic handles are also used on Mutual's Soldering irons, Paint Burner-Scraper and Circular Torches. — For Complete data, *Check New Product* 993.



New LP Gas Torches have plastic handles.

New Hand Tool

OMARK INDUSTRIES has announced production of a hammer drive hand fastening tool which enables a worker to fasten to concrete or steel with a hammer. The device requires no power source such as cartridges, electricity or air.

By concentrating the force of a hammer blow to the head of a special hardened steel drivepin which is held securely in the tool, fastenings can be made in seconds.

The tool is easy to use requiring no special instructions or maintenance. The Omark Hammer Drive tool consists of plastic-covered steel tool body and a driving ram. The drivepin is inserted into the barrel of the tool from the bottom. A plastic washer holds the pin steady while the pin is being driven into the concrete or other material. A driving ram is pushed into the barrel from the top

New hammer drive tool.

of the tool. The tool is then held securely against the receiving material while two or three hammer blows are struck on the driving ram head, which forces the drivepin into the concrete. The plastic washer disintegrates at the last hammer blow leaving a clean fastening.

The tool is used for light fastening to concrete, masonry, concrete or cinder block and mild steel. The special ballistic point design of the drivepin assures easy penetration and a firmly seated fastening. — For complete data. *Check New Product* 994.

Hydraulic Crane

THE ADDITION of a truck-mounted hydraulic crane to its line of utility bodies and equipment has been announced by the Powers-American Division of McCabe-Powers Auto Body Co., St. Louis, Mo.

New truck mounted hydraulic crane.

The unit, which has been designated "Load-Master," has a rated capacity of 4,000 pounds. It is designed for installation on any chassis having a cab-to-axle dimension of at least 84", and requires only 20" of mounting space behind the truck cab.

All movement is hydraulically actuated. Power is derived from a hydraulic pump, driven by a power take-off installed on the truck transmission. All operations are controlled by one man, with levers which are normally installed on the crane superstructure to afford operator an unobstructed view of the boom at all times.

The Load-Master consists of a hydraulic ram anchored to a supporting mast, a hydraulic winch, and hydraulic outriggers. Support cables are extended from outer end of the ram to top of the mast, and the fixed length of these cables causes the boom angle of elevation to change as the ram is extended or retracted.

The specially-designed hydraulic winch is driven by the truck engine through the power take-off. A hydraulic outrigger cylinder, with swivel-mounted foot plate, is installed on each side of the truck to furnish extra stability for side loading.

Load cannot drop, even though truck engine stalls. Hydraulic system requires intentional movement of controls before load position can be changed. A relief valve prevents overloading. — *Check New Products* 995.

WANT INFORMATION?? . .
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THE BUYERS' GUIDE

ADVERTISING, Directories — *General Telephone Directory Co., 1800 Busse Highway, Des Plaines, Ill.*—[ADV. 1]

BELTS — CLIMBERS — COMPLETE LINEMEN'S EQUIPMENT, *W. M. Bashlin Co., Bashlin Bldg., Grove City 1, Pa.*—[ADV. 2]

BOOTHS—Acoustic Telephone — *Sherron Metallic Corp., 1202 Flushing Ave., Brooklyn 6, N. Y.*—[ADV. 3]

CORDS, Switchboard (with or without plugs), Instrument (retractable and regular) and Operators — *Commercial Cord & Supply Co., Inc., 26 Main St., Clifton Springs, N. Y.*—[ADV. 4]

CORDS, Switchboard & Telephone — *Runzel Cord & Wire Co., 4727-31 Montrose Ave., Chicago 41, Ill.*—[ADV. 5]

INSULATORS, Porcelain — *Porcelain Products Inc., Box 300, Findlay, Ohio.*—[ADV. 6]

PIPE PUSHERS — *Giant Manufacturing Co., South 6th St., at 12th Ave., Council Bluffs, Iowa.*—[ADV. 7]

POLE HOLE DIGGERS — *For derrick mounted trucks. Tele-E-Lect Products, Inc., 9613 Minnetonka Blvd., Minneapolis 26, Minn.* —[ADV. 8]

POLES, Southern Yellow Pine — *Taylor Colquitt Company. 217 E. Main St., Spartanburgh, S. C.*—[ADV. 9]

POLES, Southern Yellow Pine — *Texas Creosoting Co., Orange, Texas.*—[ADV. 10]

PROTECTIVE EQUIPMENT — *Reliable Electric Company, 3145 Carroll Avenue, Chicago 12, Ill.*—[ADV. 11]

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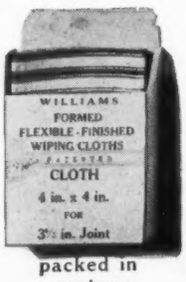

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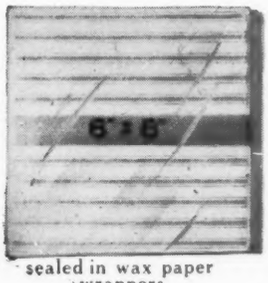

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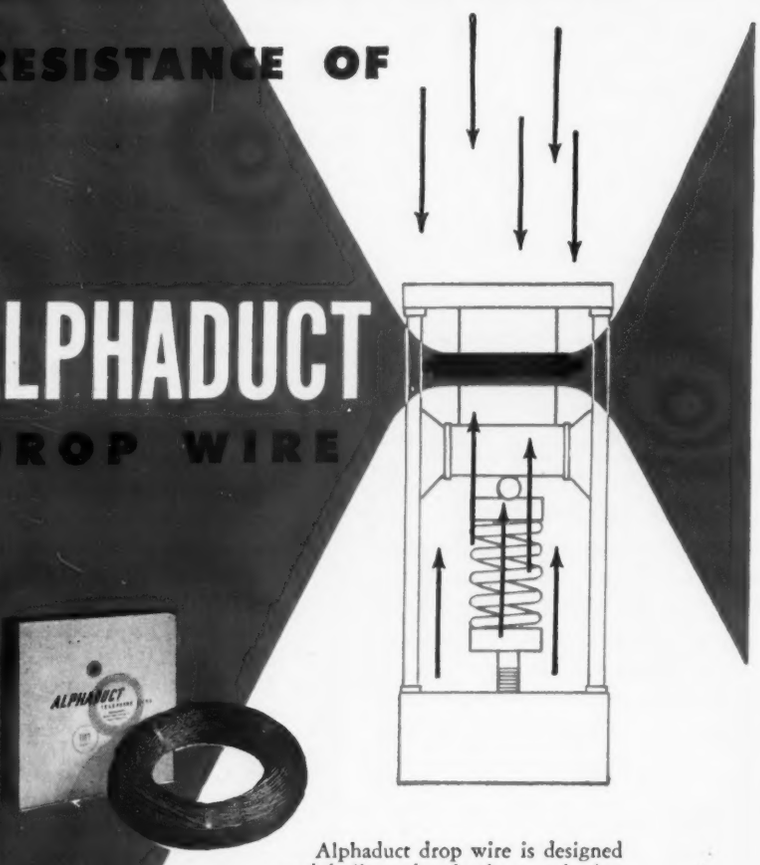

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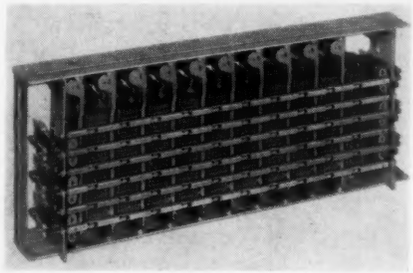
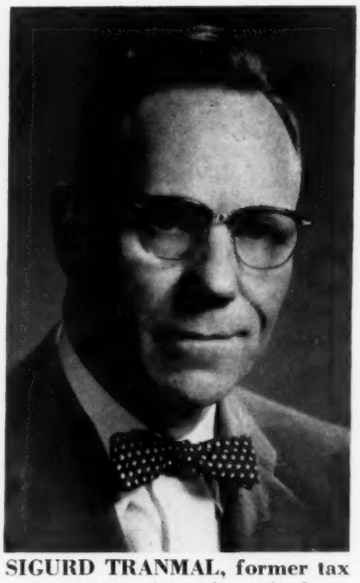
North Announces Availability of New Crossbar System

ACCORDING to the North Electric Co., Galion, Ohio the new North "By-Path" crossbar telephone system is now available for all Independent companies with all crossbar switches



and other components completely manufactured in the United States by North Electric. Production facilities of the Galion, Ohio firm have been more than doubled in the past 18 months to accommodate the production of the crossbar systems and other North products.

Installation of this common control "By-Path" crossbar switching system has been under way for several months for the first Independents to utilize the system — Seymour, Ind., and Mansfield, Ohio. The Seymour exchange will consist of 2500 lines while the Mansfield installation calls for 8000 lines.



SIGURD TRANMAL, former tax manager for Stromberg-Carlson, has been named assistant to Vice President and Controller D. G. Schuman. Mr. Tranmal joined Stromberg-Carlson in 1949 following 10 years as controller for Distillation Products, Inc. He will continue to have over-all charge of the company's tax matters, in addition to the wider areas of responsibility in his new staff position.

STROMBERG-CARLSON

Transmitter

A DIVISION OF GENERAL DYNAMICS CORPORATION

VOLUME 5, NUMBER 8 • NOVEMBER 1956

"As Maine goes . . ."

In this political year cracker barrel politicians debate the adage, "As Maine goes, so goes the nation." The "bellwether" state, following its custom of early voting, has cast its ballot, and now the rest of the nation has followed suit.

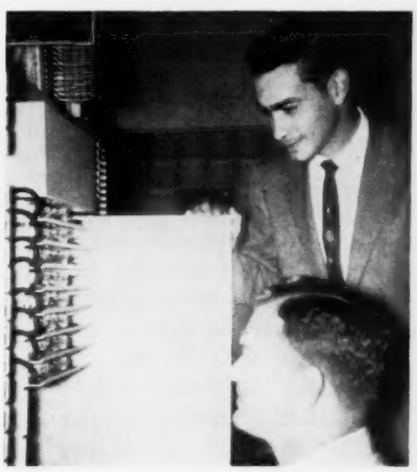
Maine has also made another decision — less exciting over the breakfast table, perhaps, but of equally great effect on the economy. Spurred on by the Public Service Commission, it is rushing to convert its many small manual telephone exchanges to dial operation — and Stromberg-Carlson is in the thick of this renovation.

It is with distinct pride that a salute is given to the Union Telephone Company — first of the many projected XY Dial offices to be placed in service in the state of Maine.

The 56-year-old company began as a single line between station agent Fred Burkett and postmaster Hampton Robbins. Soon others came to realize that telephoning was faster than walking, and tied into the line. A charter was obtained in 1900 and the company was in business. Today owner-president Russell W. Hosmer serves nearly 400 subscribers; each has a modern instrument in the color of his own choosing. Every feature of modern telephone communication is present in the system.

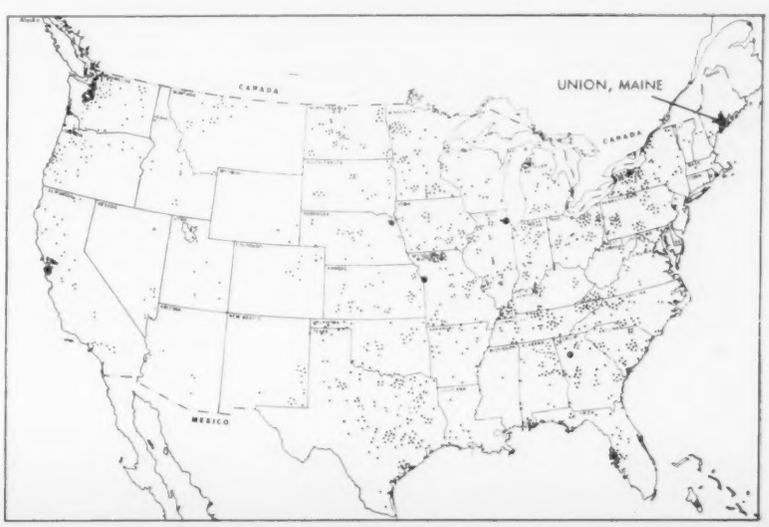
Curtis Payson, grandson of founder Burkett and still associated with the company, placed the first call following the cutover on September 20.

Colorful conversation as Nan Hosmer, Russell Hosmer and Curtis Payson inaugurate dial service at Union, Maine, by a call to Mrs. Hosmer in Springfield, Vermont. All telephones in system are full color.



Robert Clark (standing) and Coit Henley of Stromberg-Carlson make final check before turning equipment over to the owners.

Harland Demuth, plant manager for the Union dial office, makes connection at MDF.



From Maine to California, Florida to Washington — XY Dial has grown faster than any other system.

THE XY DECA SWITCH

by Maximillian F. Stoner, Electro-Mechanical Engineering

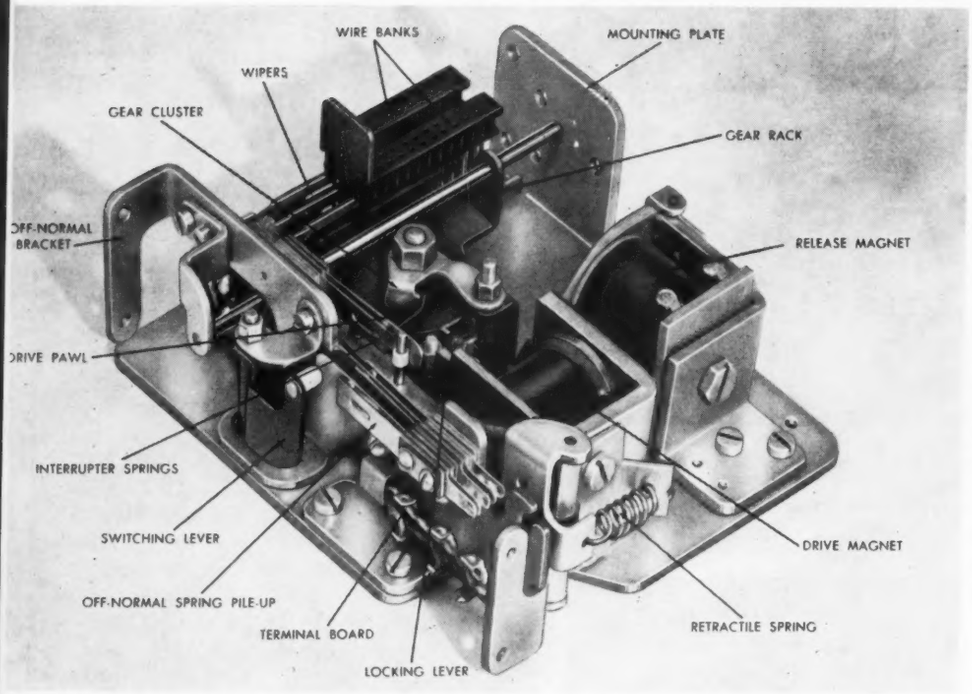


Figure 1. The XY Deca Switch and principal components.

In keeping with the rugged construction and many advantageous features of the 100 point XY Universal Switch, the Deca Switch has recently been added to the line of Stromberg-Carlson quality products for communications. The XY Deca Switch was designed to replace a direct-drive, homing (or reset) type of ten-point stepping switch, commonly known as a minor switch. For a good many years, a switch of this type has been used for frequency or station selection on party line connectors in step-by-step central office equipment.

With the advent of toll ticketing and the increasing demand for XY Dial central office equipment, the need became apparent for Stromberg-Carlson to design and manufacture a switch similar to the minor switch but more reliable, more rugged, and with added features such as: (1) a locking device to eliminate bounce of the wipers and off-normal contacts when the switch returned or was reset to the home position, and (2) four bank levels of eleven contacts each.

Based on the time-proven acceptability of the XY Universal Switch, the XY Deca Switch incorporates many of the components and design features of this famous switch — to name a few: "X" Gear Cluster and Drive Mechanism, Vertical Wire Banks, Bifurcated Wipers, Release Magnet and Mechanism, and Parko-Lubrite finished case-hardened working parts.

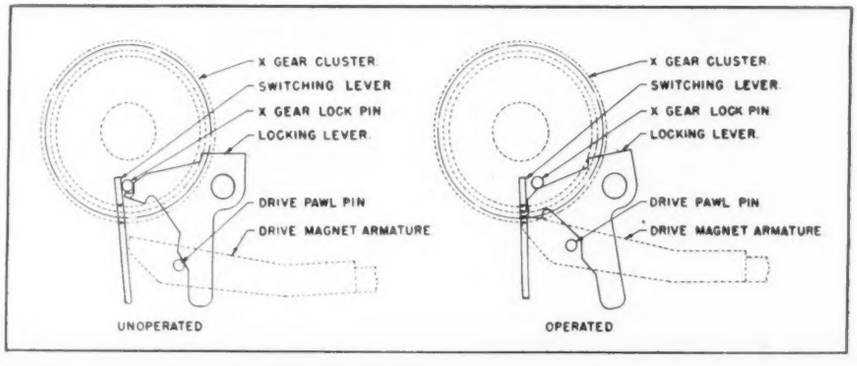
The XY Deca Switch is of the direct drive ratchet type: that is, when the drive armature is *pulled up* to the magnet the wipers are moved from one bank contact to the next. As the armature is released from the magnet, the wipers remain on that bank contact. In contrast, an indirect drive switch (such as most rotary non-homing type switches) moves the wipers during *release* of the armature from the magnet.

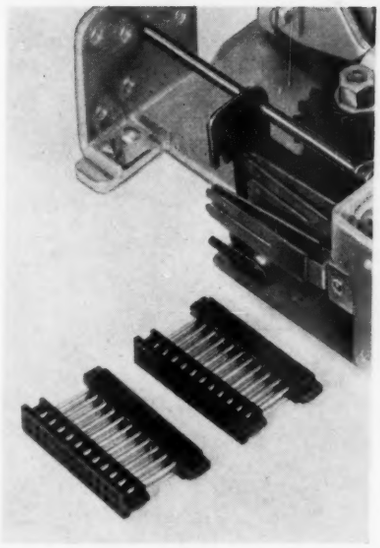
The vertical wire bank consists of four levels of eleven contacts each. Contact with each wire of the bank is made by a non-bridging, bifurcated wiper. For extra control potential, the wipers rest on one set of the wire bank rods when the switch is in the home position. *Figure* 1 shows the vertical position of the wire bank and the switch in its home position. As proved very conclusively with XY Universal Switch applications, wire banks set in a vertical position are less likely to collect dust or grit, thereby prolonging bank and wiper life. The wire banks are held in position by a spring clip which permits separation of the bank from the switch without the use of tools; this also facilitates switch transposition or replacement.

The accompanying diagram, *Figure* 2, illustrates the principle of the aforementioned locking mechanism. This feature insures that the wipers are locked in the home position until the stepping magnet operates. Also, when the wipers are reset to the home position under power of the gear cluster spring, the locking mechanism prevents rebound of the wipers. This feature is essential on critical circuits such as toll ticketing applications. The locking mechanism, in preventing wiper rebound, also prevents false or momentary operation of the off-normal contacts.

The XY Deca Switch is available with spring combinations engineered

Figure 2. Operation of the locking mechanism of Deca Switch.





A view showing close-up of wire banks (disassembled) and twin contact wipers.

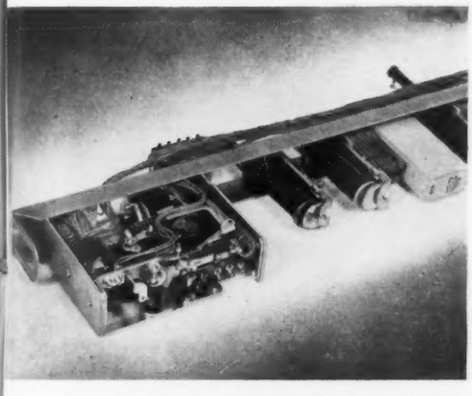


Figure 3. Relative position of XY Deca Switch mounted on a standard single-width circuit plate.

to suit a wide variety of requirements. The off-normal spring combination consists of a make and a break-make. This combination is operated when the switch takes its first step, and is held in the operated position until the switch is returned to the home position.

A set of interrupter springs can be added to this type of switch should a self-interrupted type of operation be required. To further implement its versatility, magnet springs can be added, consisting of break-make contacts. And finally, an additional control potential exists in the fact that wipers rest on a bank contact in the home position. In many cases, by taking full advantage of the available spring combinations, associated relays can be eliminated or reduced in size.

The XY Deca Switch is compact in size and weight, being 4¾″ long, 4″ wide, 1½″ high, and weighing only 20¼ ounces. It is designed for mounting on a single-width circuit plate; the switch frame is drilled and tapped for #8-32 mounting screws. *Figure* 3 shows the relative position of the switch when mounted on a standard circuit plate.

Since its inception, the XY Deca Switch has found an ever-increasing place in the Stromberg-Carlson product line for switching circuitry. Starting with connector circuit frequency or party selection, the switch was rapidly adapted to XY Toll Ticketing where the following requirements had arisen:

1. *Recording Adapters*
   - A. Counting Pulses
   - B. Counting Digits
   - C. Registering Digits
   - D. Programming Operations
2. *Register Senders*
   - A. Digit Registration
   - B. Programming Operations
   - C. Steering Digit Registration
3. *Common Equipment*
   - A. Totalizing Occurrence of Events
   - B. Totalizing Incidence of Faults
   - C. Inter-Circuit Association as a Finder or Selector

Further use of the switch involves line and equipment routiner circuits, dial intercom station selection for the Stromberg-Carlson 6K-1 telephone system and Dial — "X" telephone circuits. Also, due to the rugged construction and flexible control facilities, the XY Deca Switch has a vast potential in industrial application.

A few of the electrical characteristics of the switch may be of interest. Standard XY Deca Switches are available for 24 or 48 volt direct current operation. The switch will follow a 20 pulse per second pulse source at a percent make or pulse ratio of 31 on the low side and 87 on the high side. Maximum self-interrupted speed attainable from the switch is approximately 35 steps per second. Maximum load capable of being carried by bank and wipers is 3 amperes.

It is felt that the combination of features available and built into the XY Deca Switch has not yet been duplicated in the switching equipment field.

Dial Day for People's Telephone Company

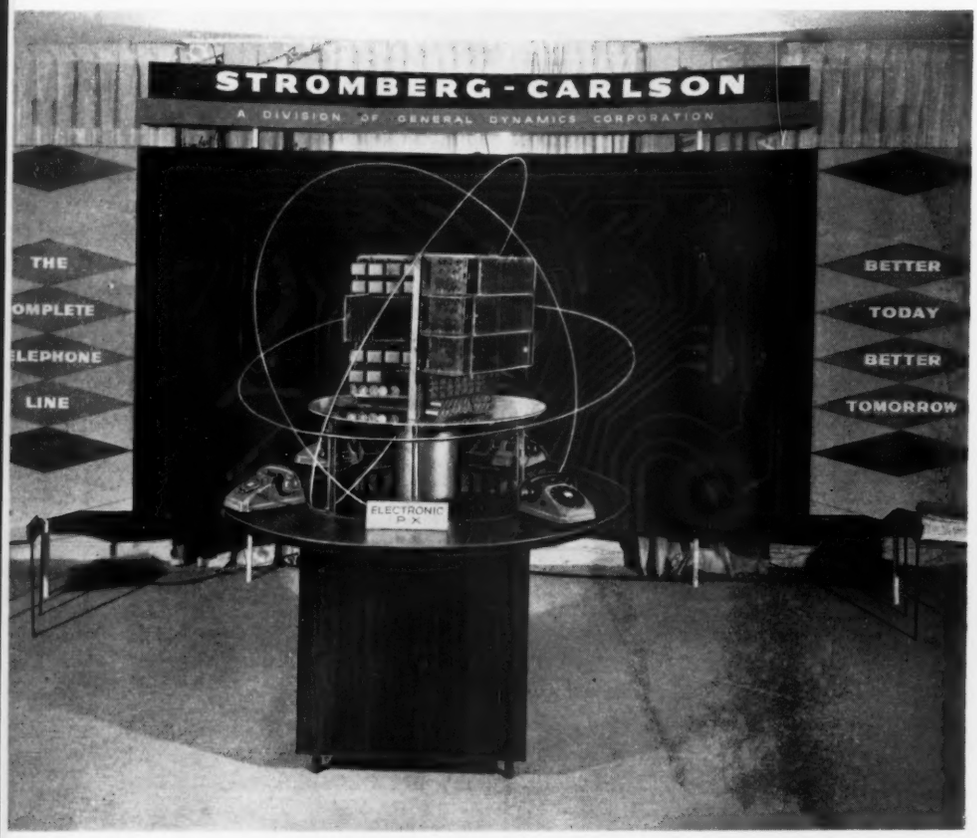
Mr. M. G. Weaver, president and general manager of the People's Telephone Company of Collinsville, Alabama, and Mr. J. Doyle Brown, central office foreman, have a five-exchange XY Dial network serving more than 1800 subscribers in the towns of Center, Collinsville, Crossville, Leesburg and Sand Rock. All exchanges have been placed on nationwide intertoll dialing. Mr. Weaver is a director and past president of the Alabama-Mississippi Independent Telephone Association and very active in the civic affairs of his state and community.

This WAS the Stromberg-Carlson exhibit just a few days before Convention opened, as flash fire leveled warehouse. Heroic days and sleepless nights put the show on the boards as scheduled.

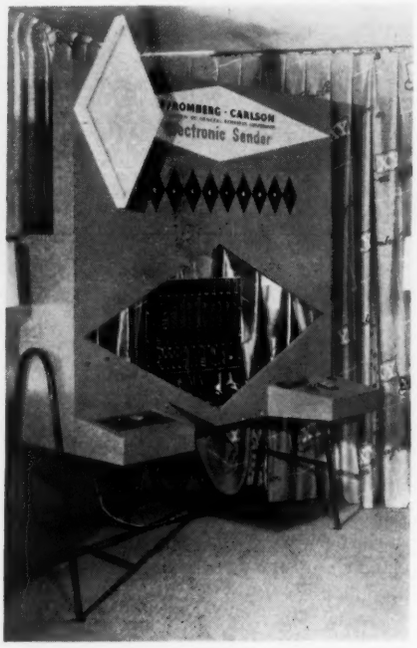
Now it can be shown . . .

Inside Look for those who weren't in Chicago

The USITA national convention is over for another year. Those who attended said it was the best ever, especially in the new products shown by the suppliers. A photograph is a poor substitute for a demonstration, but for many it will afford the best oportunity to become acquainted with the displays. The photographs below were all taken in Stromberg-Carlson rooms, where the curtain was rolled up on communications for tomorrow.



Central feature of the Stromberg-Carlson display was the revolutionary Electronic Switchboard — lodestone of new product line.



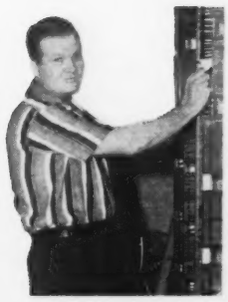
Equally novel was the Electronic Sender, with its promise of greatly improved speed and flexibility in data storage and transmission.

Pagemaster Selective Paging System, alrealy familiar to many, has commanded widespread interest wherever demonstrated.

Display illustrates a known fact: the breadth of Stromberg-Carlson's instrument line.

Carrier and Multiplex equipment with accompanying display of associated test gear.

Where is the Operator? Kids dash around trying to find out how XY Dial System works. The men could tell, but why spoil the fun!



Here we go! Byron Walker, president of the Tipton Lions Club pulls picks at MDF.

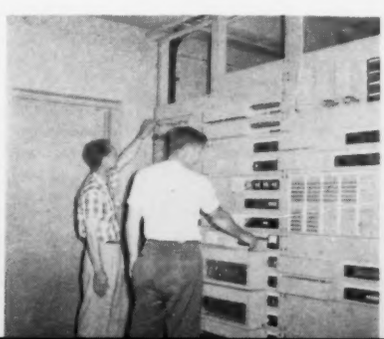
Southwestern States Co. converts Tipton, Okla., to dial

Conversion to dial operation, with 100% as the goal, is moving ahead rapidly for the Southwestern States Telephone Company. Among the recent completions announced by Mr. D. T. Strickland, vice president and general manager, is the 400 line, 1700 terminal XY Dial exchange at Tipton, Oklahoma. Company personnel assisting in the cutover in addition to those shown were Van Reed of the plant department; Buster Hutton, Elden Emmons, Van Brooks and Dean Sample — exchange equipment installers. Frank Micka represented the Stromberg-Carlson sales organization, John McPeak was the installation foreman.

M. E. Bradburn, maintenance supervisor; M. E. Barnes, plant superintendent from the general offices in Brownwood, Texas; A. J. Lacy, division manager for western Oklahoma, and Mr. Barnes, city councilman watch Alan Minger, president of the Chamber of Commerce throw the main switch cutting in the dial equipment.

Western Carolina Tel. brings XY Dial to Murphy, N. C.

When your editor visited Murphy, in the westernmost tip of North Carolina, all that you see below was on the drawing board. Mr. Lynn Garibaldi, president, Thomas Sawyer, vice president, R. E. McKelvey, general plant manager, and F. H. Dean, division manager, have brought the company a long way since it took over Bell properties four years ago. The photos show the impressive new office building, exchange manager L. J. Phillips, a portion of the XY Dial equipment, and the new toll board. A recent decision of the Utilities Commission now awards more of the area toll lines to the Western Carolina Company as a result of vastly improved service to subscribers.



Another for Alabama Telephone Co., as

Haleyville joins swing to XY Dial

Testing out the XY Dial System at Haleyville. L-R: Annie Lee Gambell, cashier; W. J. Holladay, general manager; Glenn Treadwell, assistant general manager; H. W. Vaughn, president; Sam Johnson, plant superintendent, holding telephone; T. A. Baldy, group manager, seated.

The XY dial conversion at Haleyville, Alabama, was not the first for the Alabama Telephone Company, which serves over 6000 subscribers through a network of 14 exchanges fanning out from the Fayette headquarters. Nor is it the last, as conversion of other exchanges is scheduled in a far-reaching program of modernization. The Haleyville Office is installed with 775 lines and cut over with 1100 stations. It is the first terminal-per-station system in the Alabama Telephone Company system.

Mr. Holladay and Mr. Johnson give instructions to Mr. McGee, construction foreman.

Mr. Holladay visits the operators as last calls come into manual board.

Meet Robert Seibert

Robert M. Seibert has made a specialty of training and directing engineers. For many years the Engineer-in-Charge of the Telecommunication Engineering Laboratory, director of the XY Training School, and visiting instructor in dial switching techniques at Rochester Institute of Technology, Mr. Seibert has demonstrated his ability to help other engineers find their most promising field of endeavor.

It was natural, therefore, that when a man was needed to assume the task of recruitment and personnel counseling for the expanding engineering program at Stromberg-Carlson, Bob Seibert was given this responsibility. In his new position as Staff Assistant he reports directly to Mr. Robert R. Dobbin, Chief Engineer of the Telecommunication Division.

Mr. Seibert enriched his formal engineering training at Wayne University with practical experience as a Western Electric Company installer during vacations. At the time of the Pearl Harbor attack he was stationed in Hawaii with the Army Air Force; was sent to the Radar School there and asked to remain as an instructor, later becoming Officer-in-Charge.

Engineers are where you find them. This past summer Mr. Seibert pursued a successful recruitment junket in England and portions of Western Europe. Interviews are being arranged in selected United States cities on the basis of a continuing program.

Mr. and Mrs. Seibert, the former Betty Anne Berrie, have two sons: Mark, 8, and Richard, 1; their home is in Webster, a suburb of Rochester. Mr. Seibert is an active member of the Rochester Engineering Society and the American Institute of Electrical Engineers.

Meet Fred Manley

Fred A. Manley has the challenging assignment of providing proper liaison between the Research and Advanced Development departments, covering all types of projects which relate to the general field of telecommunication. As Staff Assistant, he works directly with the Chief Engineer, Mr. Robert R. Dobbin.

The need for such liaison has become more and more apparent as traditional telephone techniques move into the sphere of electronics. Mr. Manley's job will be to select from the areas of pure research those projects most applicable to problems in telecommunication, and then to assist in the transition from laboratory to engineering models.

Fred Manley grew up in Columbus, Ohio; his formal education at Ohio State University, Rensselaer and Purdue Universities was interspersed during the early Twenties with duty as Signal Officer at Camp Perry, Ohio. He later became chief engineer for radio station WCAH, and following this, a field engineer for Electrical Research Products (a Bell Laboratories subsidiary), and the successor company, Altec Service Corp.

Mr. Manley joined Stromberg-Carlson in 1952 as Loud Speaker engineer for the Special Products Division, which subsequently became engaged in a huge project for an auto manufacturer. Just before assuming his present post, Mr. Manley was assistant chief engineer.

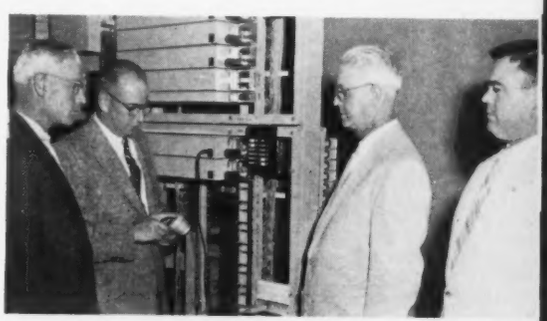
Mr. and Mrs. Manley have a hobby of back roads picnicking, where Fred puts his talents with oil and water colors to work. His professional interests include membership in the Acoustical Society of America and the Society of Motion Picture and Television Engineers.

Left to right around circle: John Gault, Buffalo —the host; Scott Gault, LaPlata; Ross Gault, Wellsville; R. J. Cushing, Stromberg-Carlson; W. Miller, Southwestern Bell at Springfield, Missouri; Harold Stouffer, Granby; Fred Cartwright, Noel; Myles Woolley, Stromberg-Carlson; and W. F. Gault, Gardner.

Family Party at Buffalo, Missouri

The list of out-of-town guests and their wives, headed by Harold Stouffer of Granby, president of the Missouri Association, was practically a roster of "who's-who" in area telephone circles. But it was, above all, a family reunion for the Gaults — Ross from Wellsville, Kansas; Bill from Gardner, Kansas; Scott from LaPlata, Missouri, and of course John, who is the owner-manager at Buffalo and put out the welcome mat. In a delightful open house more than 500 guests admired the new building and saw how a dial system operates.

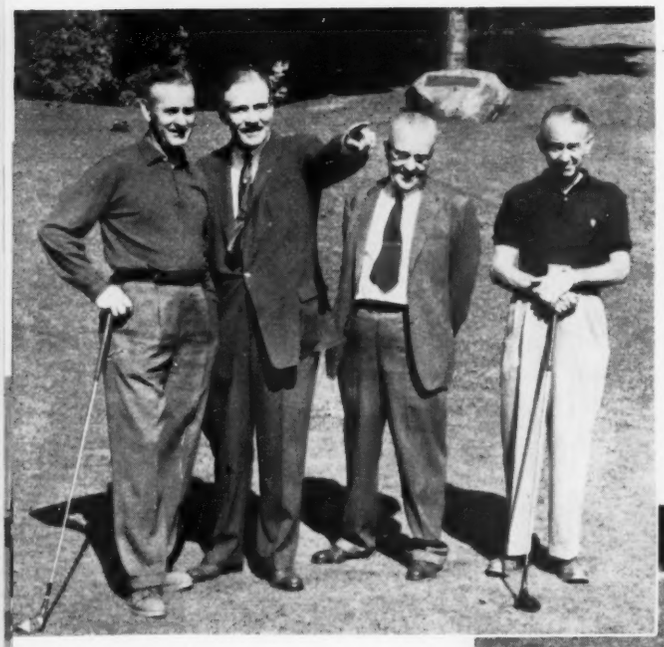
The system, at cutover on September 28, served 1050 subscribers, 300 of whom had never had telephone service before, and represents attainment of a steep goal set for himself by John Gault.



Four Gaults: from left, Scott, John, Ross and Bill.

Excitement reigns as everyone becomes a "pickpocket"-er.

Rochester Branch Golf Party

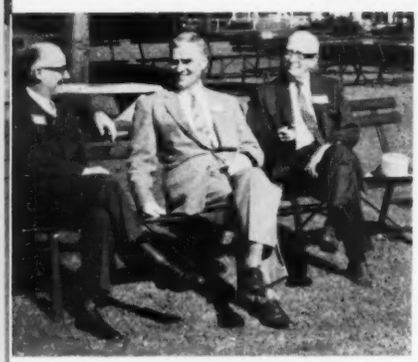


"Ham" Cunningham, secretary of New York Association, points out next flag to "Hi" Fargo of Chicago, as "Cy" Barger and Ed Sears, Sr. stand by.

Said Colby Knapp of this foursome — Don Walker of Shortsville, Knapp, Bob Griswold of Clifton Springs and Fred Nixon of Westfield, "We are the THREESOME to beat!"

The day was superb, the crowd wonderful and the dinner excellent.

Host Joe Ottalagana, Rochester Branch manager, sits in shadow of "Shorty" Swanson of Johnstown.



Pleasant conversation — might have to do with financing. C. W. Pritchard, Bill Harrison of Alfred, Hovey Griswold of Clifton Springs.

Winners all! Joe Ottalagana hands out prizes to Fred Nixon, Westfield; Emmett Swanson of Erie; Sidney Melnicove of Pine Grove, Pennsylvania; Truman Brown of Hudson, Ohio.

Big Shoes to Fill

When Spike Dasson (center) officially "retired," two sales engineers — Emmett Shanks, left, and Coit Henley, right — were assigned to fill his shoes.

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The Telecommunication Division

STROMBERG-CARLSON COMPANY

A DIVISION OF

GENERAL DYNAMICS CORPORATION

Rochester 3, New York

GEORGE B. FORBES, *Editor*

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the BACK of the BOOK

By John G. Reynolds

Life Of A Secretary

DURING the recent convention of the Michigan Independents, association secretary *Fred Twigg* reported receiving a memorandum, from a friend, containing these 16 "*contradictions*" as they occur in the life of the secretary: — (1) *If the secretary writes a letter, it's too long . . . .* (2) *If he sends a postcard, it's too short . . . .* (3) *If he doesn't send a notice, he's lazy . . . .* (4) *If he attends a committee meeting, he's butting in . . . .* (5) *If he stays away, he's a shirker . . . .* (6) *If he duns the members for dues, he's insulting . . . .* (7) *If he fails to collect the dues, he's slipping . .. .* (8) *If he asks for advice, he is incompetent . . . .* (9) *If he does not, he is bull headed . . . .* (10) *If he writes his reports complete, they are too long . . . .* (11) *If he condenses them, they are incomplete . . . .* (12) *If he talks on a subject, he is trying to run things . . . .* (13) *If he remains quiet, he has lost interest in the meetings . . . .* (14) *If he is out, he is wasting time . . . .* (15) *If he is in, he is neglecting his job . . . .* (16) *Ashes to ashes, dust to dust, if others won't do it, the secretary must.*

There might well be some claim to actuality in such inconsistencies. In fact as we thought about the 16 "*contradictions*" we decided that on a few points at least editors and association secretaries have a lot in common. . . .

"Ice, Snow & Frost"

IT COULDN'T happen in a million years but it did — the listing of *Lloyd S. Ice, Miss Ruth C. Snow and Mrs. Henry Frost,* appear one after another in the St. Petersburg, Fla. cross-section telephone directory which lists telephone numbers in numerical order. *Amy Gleason,* a telephone ad taker for *The St. Petersburg Independent,* came across the oddity and said, "*If there had been a fourth party by the name of Rain I'd have gone home.*"

By a one-in-a-million coincidence the telephone numbers of Ice, Snow and Frost numerically follow this way: *Lloyd S. Ice,* 5234 20th Ave., N., 34-3463; *Miss Ruth C. Snow,* 2834 Upton St. S., Gulfport, 34-3473, and *Mrs. Harry M. Frost,* 4701 29th Ave. S., Gulfport, 34-3475.

Neither Mr. Ice, Miss Snow nor Mrs. Frost knew they were all together in the cross section directory until Mrs. Gleason discovered them.

Poor Timing

SOME PEOPLE just never seem to have any luck. According to *Blue Bell* magazine, a motorist in Toronto recently lost control of his car and hit an outdoor telephone booth. He not only hit the booth but also knocked it over flat on the ground.

For a moment there was silence and then the booth began to heave and roll in the most unaccountable way. Then from amidst the debris there emerged a large, red-faced angry man who arrested the motorist then and there on a reckless driving charge.

It was a real misfortune to upset a telephone booth containing a policeman making a call.

Back Talk

A LA GRANGE, Ill. toll operator got a nasty shock the other day, we read in that office's paper *Silent Ring.* Completing a call to Cleveland, she heard the answering device begin to recite her message. Suddenly the same voice exclaimed, "Hello. Hello. Is someone on the line?"

"Are you alive?" demanded the startled operator.

"I certainly am," replied the voice. "I just came in to turn off my answering device."

Telephone Robin Hood

ARCHERY may well become part of the Plant training in the Pacific Company. At least Construction people found the ancient sport a big help while stringing a new line in some remote bush covered canyons in their territory.

The foreman took a tip from Robin Hood and engaged the proprietor of a local archery range. Standing by a cliffside pole, he drew a bead on another pole some 400 rugged feet away. A light nylon line attached to the arrow fell neatly across the tops of scrub bush. A rope was fastened to the line and wire to the rope.

The crew pulled the wire into place and attached it. The process was then repeated for succeeding jumps.

Money-Making Idea

MAKING dates by telephone is not headline material, but 15 male students at Mississippi State College, Starkville, Miss., have given it a new twist. They found the cost of keeping in touch with their girl friends on a campus 25 miles away was biting into the exchequer. How did they solve that? They leased a long distance telephone line linking their Kappa Sigma fraternity house with the campus of Mississippi State College for Women at Columbus.

The $112-a-month cost is split by the 15 "stockholders," each paying about $7.50 a month. "That's quite a chunk of dough," said one of the students, "But still a lot less than I paid before we chartered the line." The telephone in the "frat" house is locked and only the "stockholders" have keys.

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